August 18, 1958

Paper Trade Journal

Colthrop's New Board Mill

First Pacific Coast TAPPI Engineering Conference

Unique Turbine and Control System Handles Wide Load Demands

1

PROGRESSIVE ORGANIZATION

FOR MARKETING

ALL JOB LOTS!

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- Bond
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- Machine Coated
- Writing
- English Finish
- Mimeo
- Index
- Bristol
- Tag
- Sulphite Converting
- Bleached Sulphate
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- Kraft Converting
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- Antique
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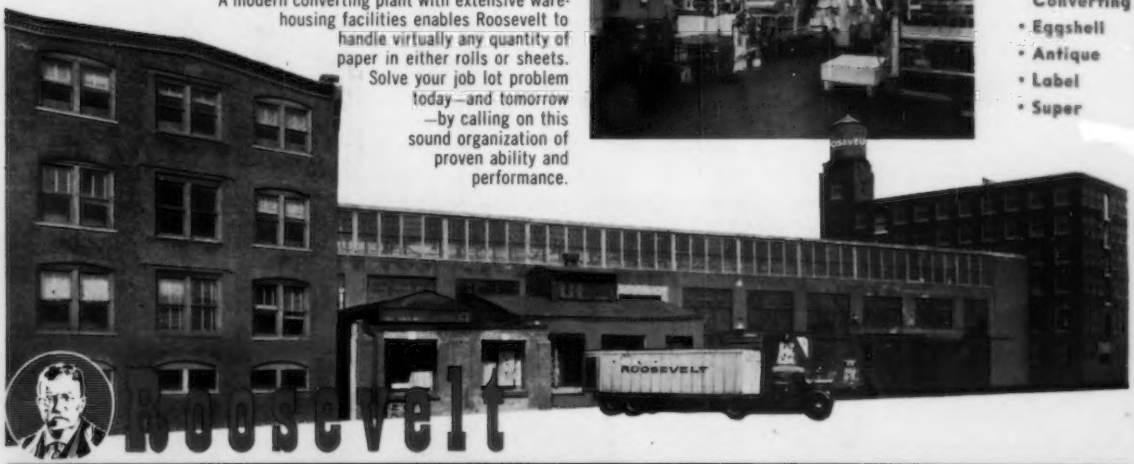

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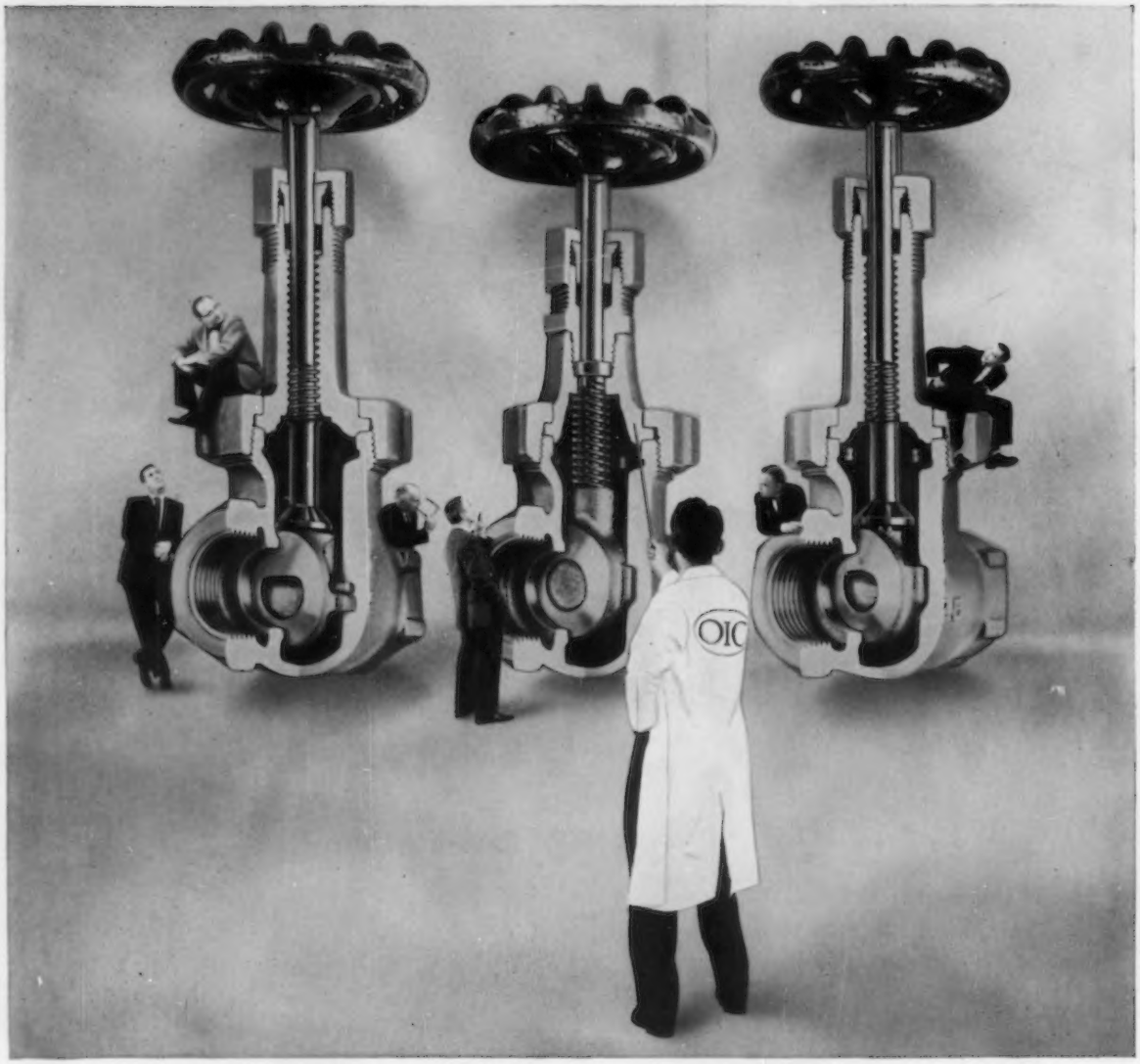

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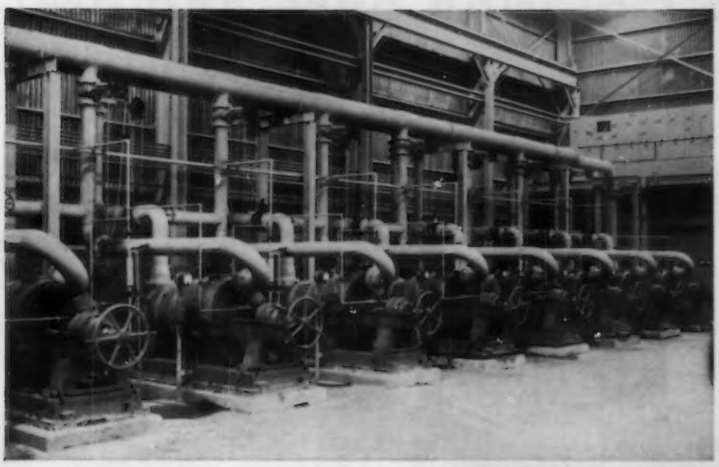
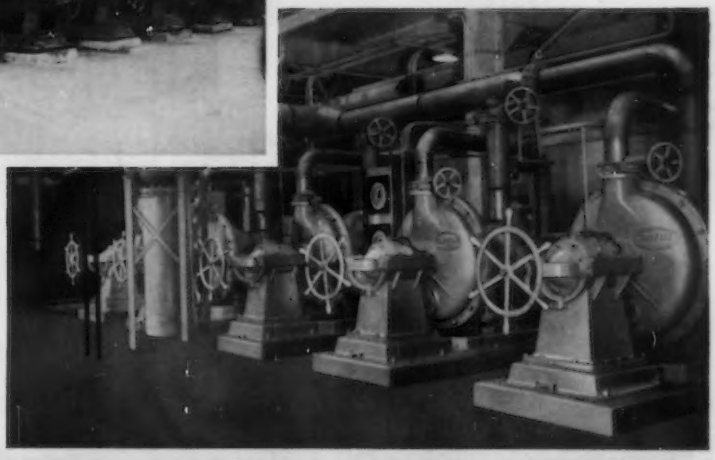


JORDANS

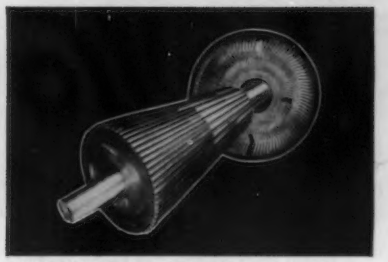
Emerson Jordans are rugged. Noted for low power consumption and high tonnage output, they are available in 9 models with up to 120 tons capacity. All parts are precision machined, easily accessible — split head design permits removal of plug with bearings intact.



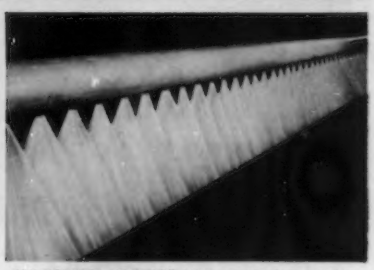
CLAFLIN® REFINERS

For primary refining, continuous beating and pulp mill refining of all types of stock, Emerson Claflins rate high in operating economy, outstanding in performance results. Available in 4 models with up to 300 tons capacity, with fillings for any refining need.

MAGNETIC TRAPS For removal of all foreign materials with no restriction to the stock flow. Protects equipment. Permanent, heavy duty plates — Standard Class 125 C. I. pipe flanges to fit 6", 8", 10", 12" or 16" stock lines.



MICROLYZED FILLINGS For any Jordan. Made of Bolton special heat treated steel, special stainless steel or phosphor bronze. Wedgeless, Ring Type and specially designed plug fillings — Hydro Truss and one piece shell fillings.



SHOWER PIPES With exclusive rotating brushes for periodic cleaning of replaceable nozzles coordinated with internal flushing mechanism, Emerson Shower Pipes are ideal for white water systems, as well as fresh.

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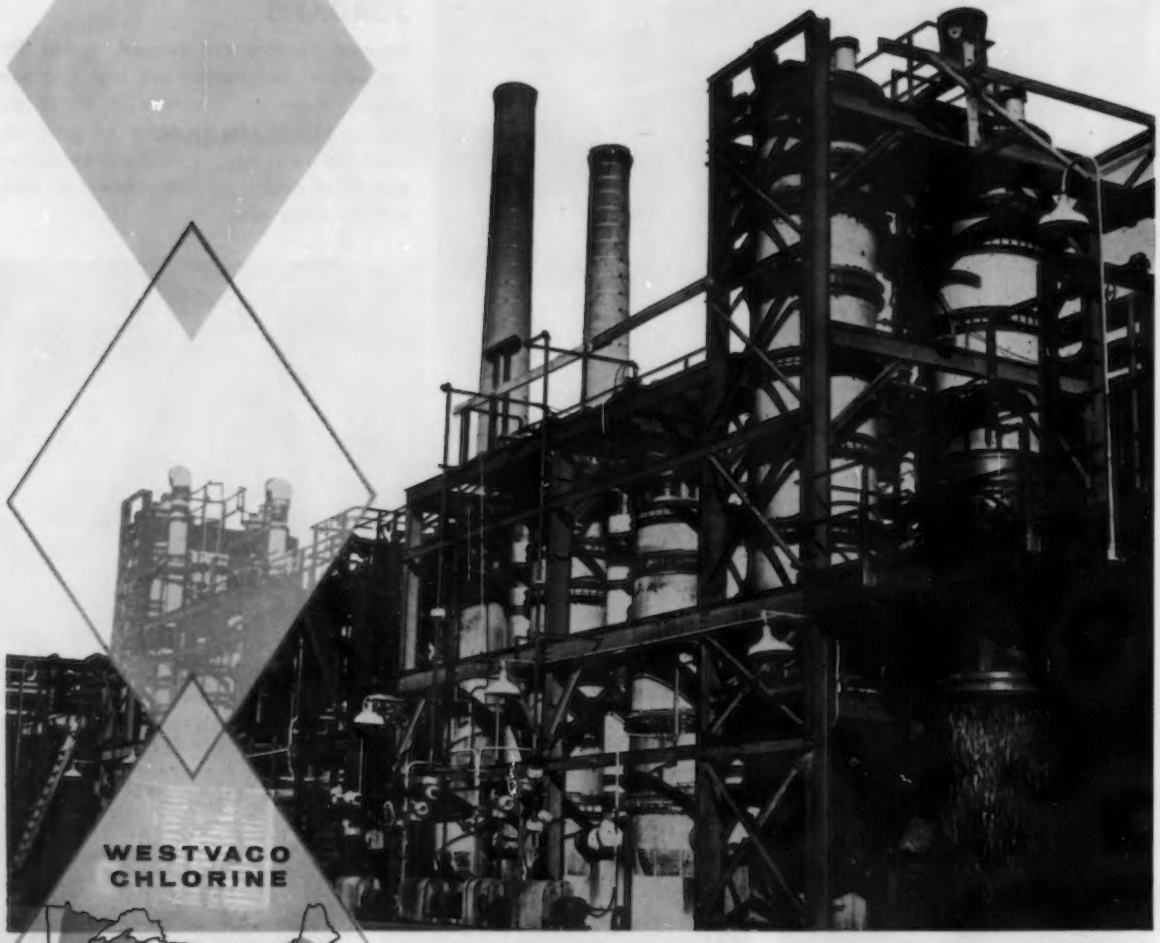
"triple scrubbing" makes Westvaco® Chlorine pure and dry!



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REMEMBER THESE DATES

Sept. 10-12: International Mechanical Pulping Conference sponsored jointly by Technical Section, CPPA and TAPPI; Chateau Frontenac, Quebec City.

Sept. 15-17: International Fundamental Research Symposium sponsored by Technical Sections CPPA and TAPPI, Queen Elizabeth Hotel, Montreal.

Sept. 24-26: Alkaline Pulping Conference, Arlington Hotel, Hot Springs, Ark.

Oct. 9-10: TAPPI Deinking Conference, Dayton-Biltmore Hotel, Dayton, Ohio.

Oct. 13-15: National Packaging Forum, Edgewater Beach Hotel, Chicago.

Oct. 20-22: TAPPI Paper-Plastics Conference, Kimball Hotel, Springfield, Mass.

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HERE'S A WET-STRENGTH RESIN THAT'S EFFECTIVE REGARDLESS OF pH

Kymene® 557, Hercules' newest aid to better papermaking, is a wet-strength resin that's like nothing else on the market. It is effective under any pH conditions . . . and is particularly efficient in the pH range 6 to 10.

Heretofore, wet-strength papers had to be made on the acid side. The result: lower dry strength, further loss of strength on aging, increased corrosion of papermaking equipment. Also, desirable wet-strength advantages could not be incorporated in alkaline papers.

Now, these limitations are completely removed. For Kymene 557 is an entirely new type of resin. It contains no urea, no melamine, no formaldehyde. Thus, it will develop its effective wet-strength throughout the entire range of conditions encountered in papermaking. And, it is also a good retention aid for Aquapel® ketene-dimer alkaline sizes.

Kymene 557 is available in drum or tank car quantities from our Savannah, Holyoke, Milwaukee and Portland, Oregon, plants. One trial will show you what you can expect from this new wet-strength resin, under any mill conditions you select. Contact your nearest Hercules PMC representative for more specific details.

Paper Makers Chemical Department

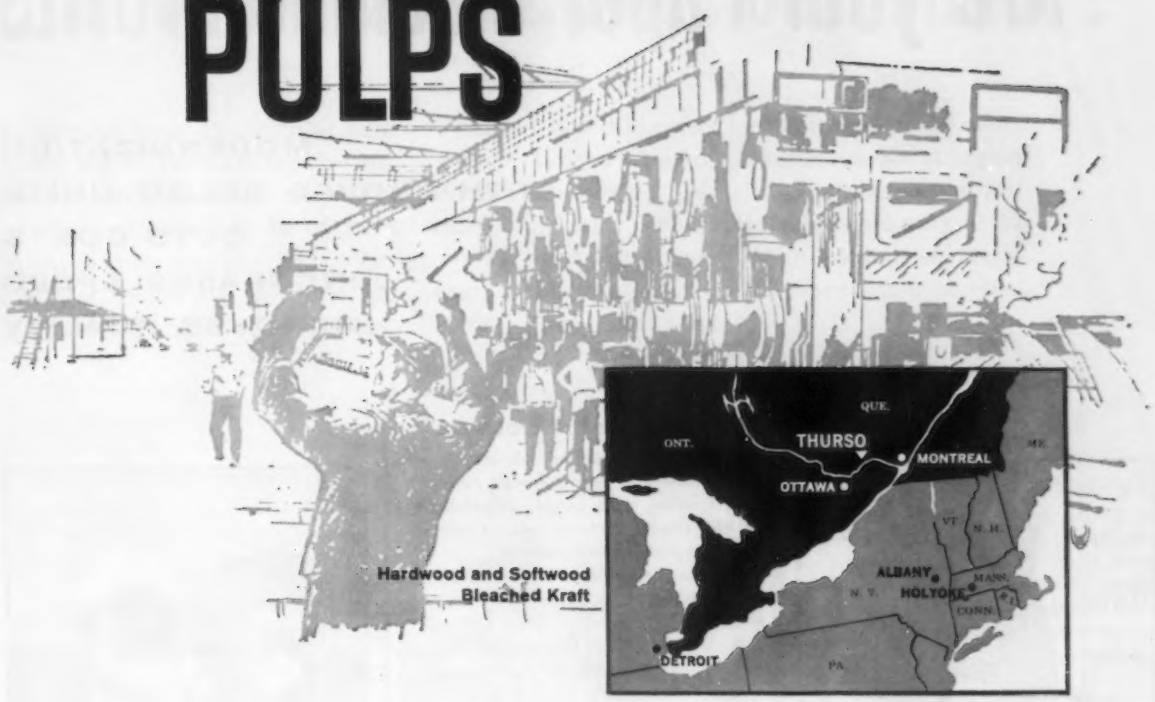
HERCULES POWDER COMPANY

INCORPORATED

900 Market Street, Wilmington 99, Delaware

PP58-2

THURSO QUALITY PULPS



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We use carefully selected hardwoods and softwoods from our own huge timber reserves and process them in the new, ultra-modern Thurso mill... utilizing the latest in equipment and the most advanced manufacturing techniques... to meet the exacting standards of our quality control and research sections.

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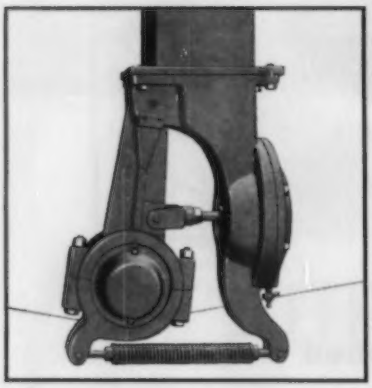


Wires running off periodically?

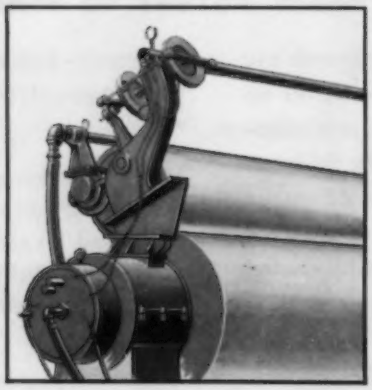
Obsolete wire guides can cut mercilessly into your paper-machine profits. Why not modernize with a low-cost Beloit automatic wire guide now? The patented Beloit air diaphragm guide moves the guide roll smoothly, efficiently. Its rate of response is independent of wire speed; wire edge damage is avoided through the use of a floating paddle. The entire mechanism is simple, foolproof, rugged—no small parts subject to easy damage. Models available for every type and size Fourdrinier.

Lumpbreaker roll problems?

A Beloit lumpbreaker roll can solve your problems. Beloit design supplies true loading with proper relationship to the couch suction box. Consider these important features:

- Air-diaphragm loading and lifting
- Remote control
- Motor driven
- Fully adjustable mountings
- Rugged body with thick, soft rubber cover

Mills report that the addition of a Beloit lumpbreaker roll results in marked improvement in machine efficiency and drying.



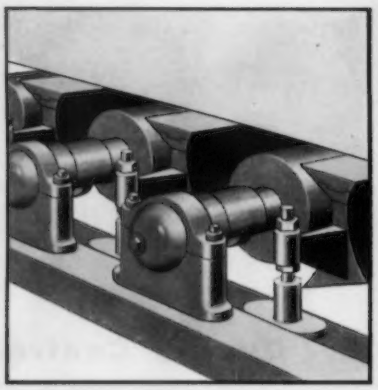
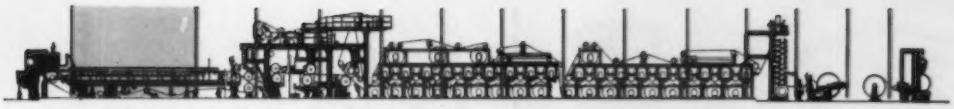


Table rolls bouncing?

Modernize with Beloit table rolls! Adequately sized precision balanced table rolls are a necessity if optimum sheet formation is to be achieved. Beloit gives full attention to detail: roll bodies are made to order, straightened, carefully machined, and balanced on precision equipment. Result: a table roll that will give outstanding performance. Beloit features table roll covers of micarta, rubber, composition, and brass—with special grooving available for reduced drainage rates.

BELOIT UNITS FOR FOURDRINIERS: SUCTION COUCH ROLLS • DANDY ROLL ASSEMBLIES
WIRE ROLL DOCTORS • WIRE TENSION ASSEMBLIES • STAINLESS STEEL
SAVEALLS • BREAST ROLLS • SHOWERS AND SQUIRTS



ONE OF A SERIES SHOWING TYPICAL BELOIT SOLUTIONS TO COMMON MILL PROBLEMS

tied to an OBSOLETE Fourdrinier?

Modernize your Fourdrinier with proved Beloit units. Here are components for the Fourdrinier section of your paper machine which have proved to be of special value in increasing speeds, improving paper qualities, reducing machine downtime, and cutting maintenance costs. Beloit also builds complete Fourdriniers of every type: stationary, cantilever, pit stringing removable, aisle stringing removable.

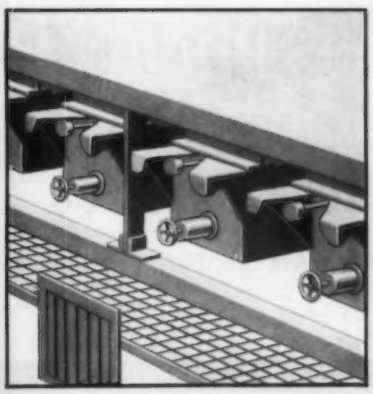
Let a Beloit sales engineer show you the best Fourdrinier design for your machine. Sheet quality improvements can be great —the cost small.

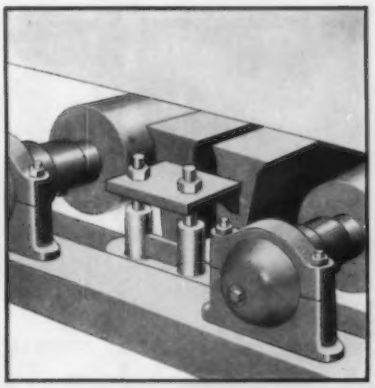
Suction boxes chattering?

Check these important features built into every new Beloit suction box:

- Stainless steel construction with effective reinforcing
- Internal construction that makes cleaning easy
- Full area discharge
- Box hangers for automatic height compensation
- Tried and proved suction box oscillators

A complete range of suction box covers is available.





Wire drainage problems?

Beloit builds a complete line of forming boards and deflectors—designed to promote natural drainage and assure uniform formation. Forming boards are available in several types, incorporating convenient adjustments to permit accurate alignment with wire configuration. Single and multiple strip deflectors are available for specific application to every grade, speed, and machine width. Forming boards and deflector bodies are extra-heavy-duty stainless steel fabrications, especially machined to compensate for deflection.

Wire rolls thin and bouncing?

Wire rolls *must* be strong to reduce deflection—must have smooth surfaces for effective doctoring—must turn freely to avoid wire wear. Beloit-designed wire rolls with special antifriction bearings provide all three features. Newly designed bearing assemblies exclude water and retain grease more effectively than ever before.... Rugged Beloit wire rolls are available with rubber, monel, composition, or brass covers.

» **ACT!** *Write for facts —or ask a Beloit Sales Engineer. Beloit Iron Works, Beloit, Wis.*

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your partner in papermaking

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  - ☐ From hot sulphite impregnated chips
  - ☐ From kraft knots
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- ☐ Recovering chemicals at high concentration
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- ☐ Continuous mechanical impregnating of chips

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GOOD TIME FOR HARD LOOKS

at needless chlorine costs

Columbia-Southern's manufacturing and servicing experience with quality chlorine may help you achieve appreciable savings on former costs. Isn't this the ideal time to see if your chlorine purchase and use practices aren't costing more than necessary?

Let's take the *quantity* of chlorine you are currently buying and handling. Is your operating volume most economically adapted to tank car, barge, ton tank, or cylinder delivery? Are you quite sure that new or projected changes in your products or processing won't change this picture? Do you have all the facts on completely up-to-date unloading techniques and equipment?

Let's look at the uniform *quality* of the chlorine you are receiving. Here again, Columbia-Southern can advise you with recognized authority as the country's leading merchant producer. As a matter of record, we have led in developing such vital improvements in chlorine transportation as the fusion-welded tank car, the 55-ton single unit car, the safety-dome platform, the industry's first large capacity barge fleet for inland waterways delivery, and other user economies or safety features.

Our well-grounded Technical Service specialists, too, have helped customers save on needless chlorine costs. One valuable aid, for example, is their extremely thorough yearly inspection of your unloading, storage, and use operations. Isn't it simple good business, especially now, to see what savings they might work out for you? You may request their services either through our Pittsburgh address, or any of the fourteen Columbia-Southern District Sales Offices.

The Columbia-Southern Chemical Corporation, One Gateway Center, Pittsburgh 22, Pennsylvania. Offices in principal cities. In Canada: Standard Chemical Limited.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION A Subsidiary of Pittsburgh Plate Glass Company

Clark-Aiken MACHINERY

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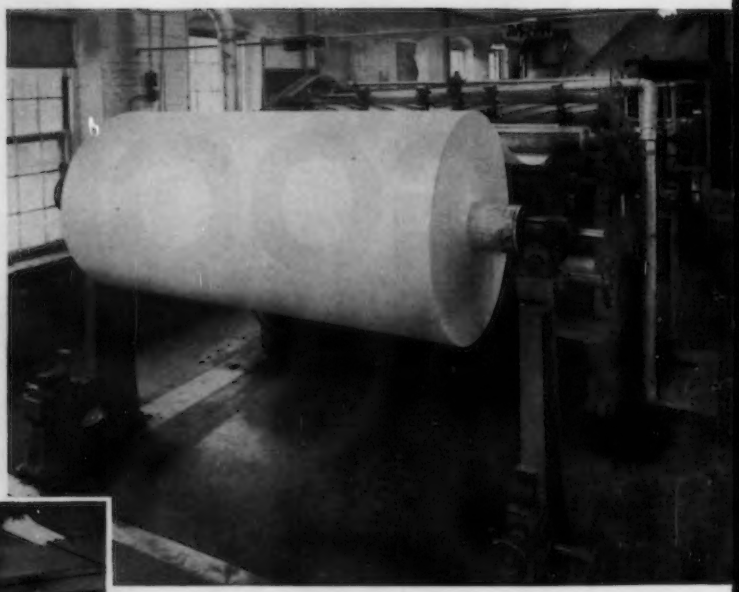
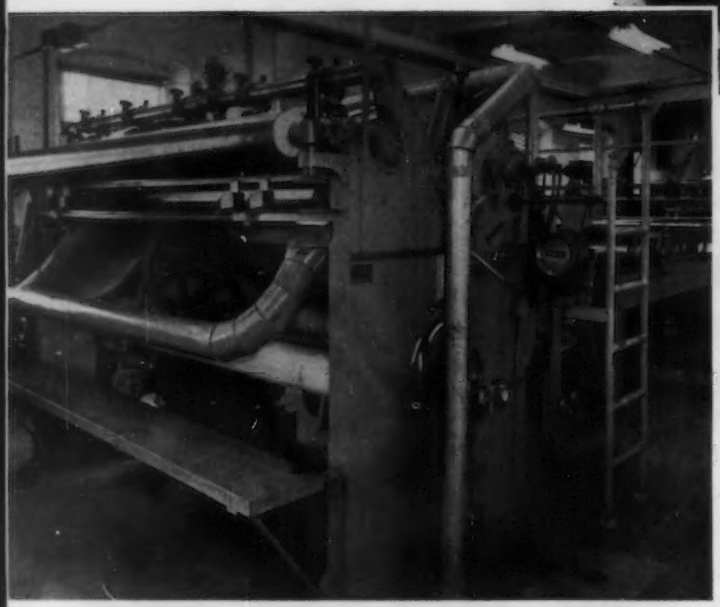




Clark-Aiken machinery—custom tailored to individual requirements—makes fast, efficient and practical automation a reality in *your* finishing room!

If, like Crane and Company, your primary concern is for quality but you still want to boost production and lower finishing room costs then investigate the advantages of completely integrated equipment designed by Clark-Aiken to fit **your** needs.

Forward-looking management has been quick to recognize the benefits of practical finishing room automation. And they turn to Clark-Aiken, an acknowledged leader in the manufacture of paper mill machinery, to supply the solution to their specific production problem. Consult Clark-Aiken for immediate and considered attention to **your** finishing room equipment needs.

Mr. Gilbert D. Kittredge, general superintendent, Crane and Company, Dalton, Massachusetts, writes:

"We have been using Clark-Aiken equipment for over twenty years with excellent results. Our new cutter was installed with a 100" trim paper machine and replaced another type C cutter which was not wide enough for our new installation. The new C cutter represents considerable improvement over the older type which we have had in service for a good many years. Considerably higher cutter speeds are possible and with the many adjustments on the machine extremely accurate sheeting may be achieved. We do not operate this particular cutter at high speeds, however, as it follows the paper machine on a three shift basis and the sheeting is watched very carefully for removal of any imperfect paper at this point.

"In the manufacture of our quality papers it is important that a good sheeting job is done and the Clark-Aiken cutter fits this bill extremely well.

"We have always received excellent service and co-operation from the Clark-Aiken organization and can highly recommend their sheeting equipment."

THE Clark-Aiken COMPANY

956 SPRINGFIELD ROAD

LEE, MASSACHUSETTS

Paperlynen Co. makes 45 million hats a year, using Cities Service Pacemaker Wax for the hat bands. Says Designer Devillers: "We find it's the best wax there is for properly penetrating the paper hat bands. In addition, its low degree of vaporization keeps our plant far cleaner than previous waxes. Formerly, we had to steam-clean our air-conditioning coils to remove clinging wax—but not since we switched to Pacemaker."

As a service company for folding box manufacturers, Advance Finishing must satisfy "professionals" who recognize and demand the best finishing job, including wax coating. Advance Finishing favors Cities Service Pacemaker Wax for two reasons: "First, the wax itself provides the slippage, hardness, and gloss so vital to our operation. Secondly, the service and localized warehouse facilities of Cities Service are supreme."

"It stays on hat bands, keeps out of customers' hair!"
—Paperlynen Co., Columbus, Ohio
"The wax is wonderful, the service supreme!"
—Advance Finishing Co. Chicago, Illinois
WHAT THEY'RE SAYING...
about Cities Service Pacemaker Wax
"When heat waves stopped the presses, Pacemaker Wax let 'em roll again!"
—Paper Products Co., Cincinnati, Ohio
"The hub of our waxing operation is Cities Service Pacemaker Wax."
—Hub Folding Box Co., Boston, Massachusetts

For many years, Cincinnati's hot summers forced Paper Products Company to shut down because the wax they were using softened and stuck to die-cutting presses. President O. J. Smith sought a better wax—one that would mix with polyethylene in accordance with his own special formula, withstand the highest heat waves, and properly coat cartons already pre-coated with resin. "We found all these characteristics in Cities Service Pacemaker #53," says Mr. Smith, "and now we get a better coating than ever, with only half the film thickness required with previous waxes!"

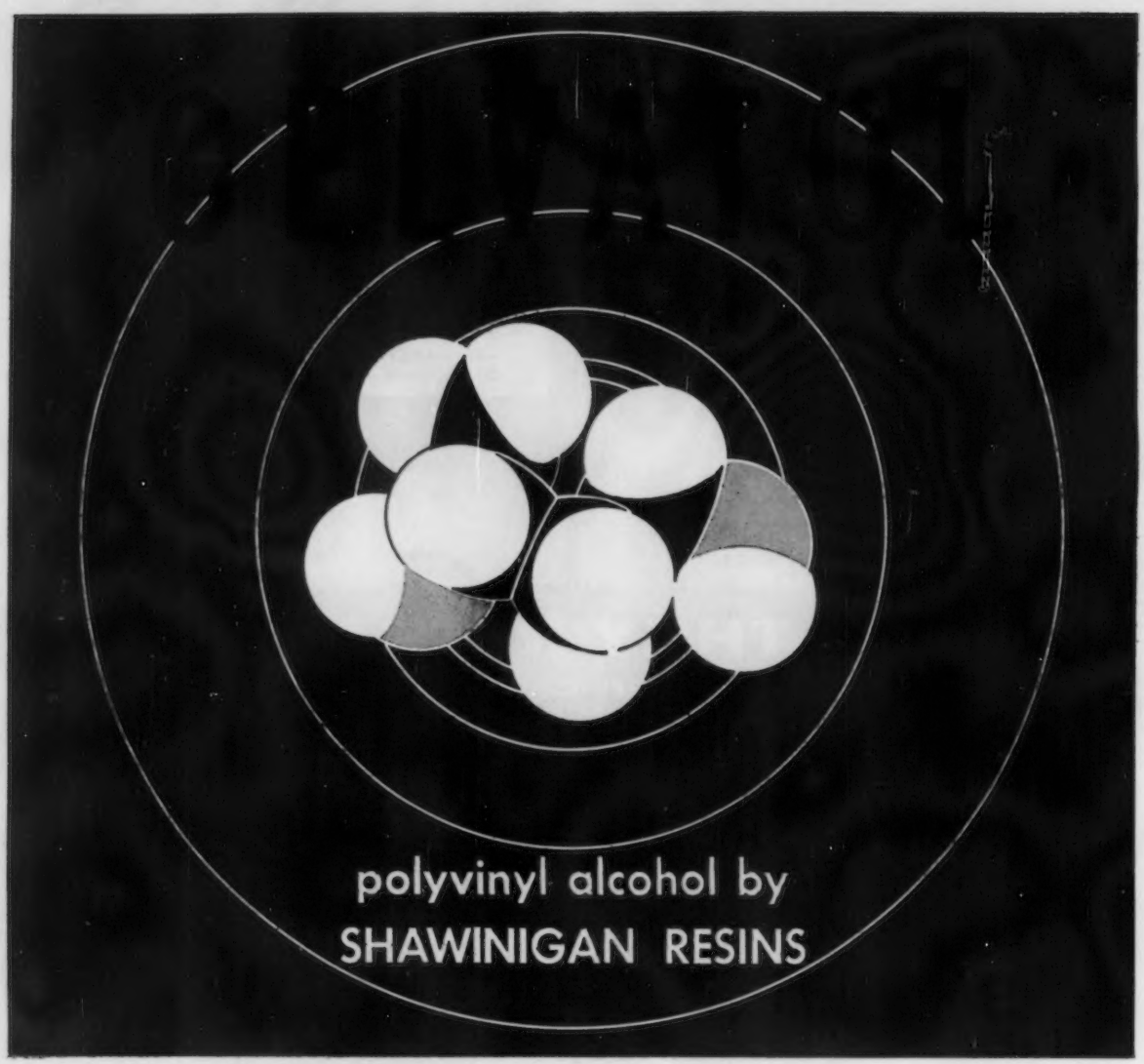
One of Boston's biggest paper converters, Hub Folding Box Company supplies the toy, textile, hardware and cosmetics industries, and one of its biggest jobs is supplying Boston's huge frozen fish industry. Here, Cities Service Pacemaker Wax plays an all-important part—providing the coating that will keep fish fresh and unharmed by frequent handling. Says Treasurer Libertine: "We especially like the pliability of Pacemaker Wax and its exceptional non-cracking characteristics. When you're dealing with frozen food, these are the two most important advantages a wax can deliver."

The satisfied customers above are just a few of the many who praise the superiority of Cities Service Pacemaker Wax. If you have a waxing problem, Cities Service has the wax and the wax specialist to solve it.

You'll also like the Cities Service local warehousing facilities. For the full story, talk with a Wax Representative from the nearest office. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS



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Paper and Board Up in July

July traditionally has the lowest paper and board mill operating rates for any month of the year, due to the pattern of vacation shutdowns at many mills. Preliminary figures for July 1958 indicate that operating rates for board and paper were equal to or slightly above those for July of last year. This is the first month this year that operating rates approached those of last. This means that actual production of both should, due to the intervening capacity increases, definitely be higher than for July 1957.

Board Leading Our Recovery

First detailed figures on paper and board production for June as released by the U.S. Dept. of Commerce show that board production in June was 2% above a year ago! Paper production was only 1.7% below the same month last year. As noted above, both grades should show well ahead on July tonnage. Combined paper and board production in June was off only about one half of 1% from a year ago. Pulp production was off about 3% from June 1957. Examining June paper production by grades we find two of the largest classifications, coarse (bag, sack, wrapping) and newsprint (biggest loser) were off from the comparable figures of last year while the following were well ahead; sanitary tissue, machine coated, fine and book. Liner board, folding and special food boards were well up while container and nonbending grades were off fractionally.

It Was Just Around the Corner

There can be no doubt that the general business upturn first pointed out on this page during April is now in full upswing. We now appear only to have been wrong in our caution with regard to the rate at which it would build up. There is now hardly a single indicator of our economic health which does not present an optimistic picture. With such a sudden and strong upturn we must be prepared to witness possible minor setbacks.

Asphalt Roofing and Siding Up

Another segment of our industry, building products, is showing strong signs of an upswing. Asphalt roofing and asphalt siding shipments were up 38% and 23% respectively in June of this year versus last. Asphalt roofing in fact for the first six months ran 10% over the first half of 1957.

Now Is the Time

With such strong signs of upswing in our industry, top management should well consider relaxing its heavy hold on capital expenditures. Now is the time that prompt shipment can be obtained on new equipment and supplies. If purchases are delayed until the next boom is in full bloom, everyone will be buying at once with consequent delays in delivery. Now as never before our industry must look at its plants to see where it can spend money to save money. The need to combat rising costs is well shown by the current financial statements of our industry. Earnings for the first half of this year have been off, in most cases, out of all proportion to decline in sales.

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Howard Smith Plans Cornwall Expansion

Planned for completion in 1960, the expansion program at the Cornwall Division (Cornwall, Ont.) of Howard Smith Paper Mills Ltd., includes the following:—

1) A new paper machine designed for the manufacture of fine papers.

2) A new machine room for the above.

3) Stock preparation building to house the equipment to supply the new requirements.

4) A new woodyard for the exclusive use of hardwoods.

5) An extension to the finishing department.

6) A new coal-fired steam boiler.

7) A general services building which will include employees' cafeteria and central locker and washroom areas.

The new paper machine is expected to be in production by March 1960. Contracts are expected to be placed in September of this year. It will have a width of approximately 180 inches at a designed speed of 1500 feet per minute. The new production will increase present capacity by some 50 per cent.

In order to process the paper from the new machine a large extension will be made to the present finishing department. Following success with automatic horizontal and vertical conveyors the additional finishing department will likewise be equipped with automatic production equipment.

The three story service building, approximately 60 x 100 feet, will house a modern cafeteria on the lower floor, lockers and washrooms on the second floor. The third floor will eventually provide additional office space.

With a capacity of 400 thousand pounds per hour, the new boiler will not only provide the necessary steam for the additional operations, but will permit the removal of some of the older equipment installed in the early 1920s.

As the use of hardwoods becomes more extensive, a separate woodyard has been planned. The new area is located across a main highway and will include storage area, debarker and chipper. Prepared chips will be air-blown to the pulp mills through an 18-inch pipe.

St. Regis Seeks Control of Growers Cont.

St. Regis Paper Co. announces that it is making an offer of exchange to the stockholders of Growers Container Corp. in which St. Regis holds an interest of approximately 31 per cent. The basis of the offer of exchange is one share of St. Regis common stock for each eighteen shares of Growers' outstanding capital stock.

The offer will be declared effective if 64 per cent of the outstanding shares of Growers' capital stock is deposited for exchange, resulting in St. Regis holding 95 per cent of the stock. However, should St. Regis elect to do so, it could declare the offer effective if a lesser per cent but not less than 49 per cent is so deposited, resulting in St. Regis holding approximately 80 per cent of these shares. The offer of exchange will expire August 30, 1958 at 3:00 p.m. San Francisco time.

If the offer of exchange is declared effective, Growers business will be conducted as a division of St. Regis, designated as Growers Container Co.

Growers Container manufactures corrugated shipping containers for fresh fruits, vegetables, beverages, canned goods, frozen foods, and industrial commodities. Its three plants are located at Salinas and Fullerton, Calif., and Jacksonville, Fla.

Consolidated Reaches Agreement with Unions

A joint labor agreement between Consolidated Water Power & Paper Co., Consoweld Corp., and four affiliated unions representing 2,200 production and maintenance workers has been signed in Wisconsin Rapids, Wis.

International unions and their affiliated locals which negotiated the new agreement with representatives of the companies are International Brotherhood of Pulp, Sulphite, and Paper Mill Workers; International Association of Machinists; International Brotherhood of Electrical Workers; and United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry.

The new one-year agreements provide for a general wage increase ranging from five cents to eight cents per hour retroactive to May 1, 1958. This wage increase brings the base hourly rate for male employees to $1.87.

The agreements also establish December 24 as a seventh paid holiday.

Agreements between Consolidated, Consoweld Corp., and Office Employes International Union No. 95 were signed on July 22, 1958.

Ten-Year Gifts for WMU's Paper Program

In the first 10 years of its paper technology program, Western Michigan University has received a total of $356,107.42 from industry to support such studies.

In an intensive four-year program, Western Michigan University has turned out 110 graduates thus far, of whom 100 are employed directly in the paper industry or its supplier organizations.

Support for the program from industry is in addition to a $125,000 appropriation two years ago from the Michigan Legislature to aid in the erection of the Paper Industry Laboratories building, a modern structure built adjacent to the University's physical sciences building.

A breakdown of figures, as prepared for the State Board of Education, reveals industrial gifts in the following categories:

Scholarship funds	$35,690.68
Scholarship endowment funds	6,552.50
Laboratory Equipment	52,714.46
Laboratory building & equipment	252,681.79
TAPPI Loan Fund	1,467.99
WMU Sales Training Fund	7,000.00
	$356,107.42

Included in these gifts are funds for the new 24-inch fourdrinier paper machine which will be installed and ready for operation sometime early in the winter.

Also opening this fall is a new curriculum, backed by the Salesman's Assn. of the Paper Industry, to train sales personnel for the nation's vital paper industry.

Mexican Sugar Firm to Make Paper

The San Cristobal Sugar Mill, in Mexico, one of the largest in Latin America, plans to enter the paper manufacturing field on a large scale. Roberto Garcia Mora, head of the mill, said that he has okayed a project to establish a paper mill to utilize the huge amounts of sugar cane bagasse now wasted. A total of 150 million pesos ($12,000,000), is to be invested in the new paper plant.

The plant will produce various grades of paper for wrapping bags, paperboard containers and boxes. Experiments will also be made to apply the bagasse paper to other commercial paper uses, possibly paper towels, napkins, etc.

Canadian Paperboard Picture

Canadian paperboard production totalled 407,682 tons in the first six months, down 6.3 per cent from the year ago figure of 435,027 tons. Output for the month of June was 70,856 tons this year as against 73,208 tons last year. Exports of paperboard to the end of June were 28,799 tons as compared with 39,604 tons for the same period last year. Shipments to Canadian consumers for the period were 347,563 tons this year as against 388,675 tons in 1957.

Third Annual Paper Conference

The third annual pulp and paper conference will be held at Western Michigan University's Paper Industry Laboratories building January 14 and 15, 1959.

The surface treatment of paper and paperboard at the size press and the calenders will be the topic for the meetings.

As in past years, this conference will coincide with the annual Papermakers Night in Kalamazoo January 15, cosponsored by the Michigan Division, Superintendents Assn. and the Kalamazoo Valley section of TAPPI.

Forestry Robot

The newsprint industry is experimenting with the idea of a robot capable of traveling through the woods, felling trees within its radius and bunching them in piles of cords.

The Newsprint Information Committee says a small taskforce of engineers is at work planning the machine. The idea is to check the mounting costs of getting trees to the paper mills.

Flexographic Assn. Schedules First Meeting

An organization devoted to the technical side of the flexographic printing process has recently been formed. It is known as the Flexographic Technical Assn. and will hold a formal organization meeting September 26 at the Biltmore Hotel, New York City.

The membership of the association will be composed mainly of those men in management, research and production who are concerned with the technical aspects of flexography—engineers, chemists, superintendents and foremen as well as corporate officers.

Flexographic printers who wish to attend the organization meeting may obtain reservations or membership application forms from Franklin Moss, president of Mosstype Corp., Waldwick, N. J. Mr. Moss will serve as chairman of the meeting.

The primary purpose of the association, according to Mr. Moss, is the technical advancement of flexography, serving as a clearing house for technical problems. It can undertake cooperative studies and group discussions on quality control, production techniques, troubleshooting procedures, training methods, evaluation of new developments, standard practice surveys and other subjects.

SE Community Relations Group Plans Meeting

Two top professionals in the U. S. public relations field will be the principal speakers at the fifth annual meeting of the Southeastern Paper & Pulp Industry Community Relations Service.

The meeting will be held October 23-24 in Tuscaloosa, Ala., according to Paul K. Honey, Memphis, chairman of the CRS board of directors. The southeastern community relations group covers the states of Virginia, North and South Carolina, Georgia, Tennessee, Florida and Alabama.

Scheduled as speakers at the two-day annual meeting are: William G. Werner, Cincinnati, Ohio, director of public and legal services of The Procter & Gamble Company; and John G. Mapes, New York City, chairman of the executive committee of Hill and Knowlton, New York public relations firm.

Mr. Honey said the CRS program committee is securing additional speakers and panel participants for a program to be built on the theme of: "Should People Like Us—and Do They?"

Mr. Honey, who is vice president of Buckeye Cellulose Corp., said the Tuscaloosa meeting speeches and panels will discuss these major questions:

1. How can we make the public relations policies, procedures and day-to-day actions of the Southeastern paper and pulp industry more deserving of public friendship?

2. How can we determine accurately what people really think?

Meeting sessions will be in the Stafford Hotel, excepting a social hour and dinner to be held on the Warrier River aboard a party boat owned by Gulf States Paper Corp. of Tuscaloosa.

Mr. Honey said advance registrations for the CRS meeting may be made with Frank D. Parham, public relations director of Gulf States, Tuscaloosa.

Paper and Board Production

According to the American Paper and Pulp Assn., the ratio of the United States production to mill capacity for the week ending August 2, 1958, was 87.8 per cent compared with 88.5 per cent revised for the preceding week. The ratio was 89.9 per cent for the corresponding week a year ago.

The paperboard production ratio for the week ending August 2, 1958, was 93 per cent compared with 93 per cent for the preceding week and 95 per cent for the corresponding week last year.

(Detailed statistics on page 24.)

January Set for CPPA Technical Section Meeting

The 1959 annual meeting of the Technical Section, Canadian Pulp and Paper Association, will take place at the new Queen Elizabeth Hotel, Montreal, on 28, 29 and 30. Requests for accommodation should be addressed to Nelson Verge, Rooms Division manager of the hotel. Give the date and time of your arrival, and if you are a member of the Technical Section, the hotel should be so advised.

Maine-N.H. TAPPI Plans Fall Meeting

The fall meeting of the Maine-New Hampshire section of TAPPI will be held at the University of Maine on October 24-25. The technical program will be on the subject "Pulp and Paper Research at University of Maine."

The tentative program is: "Research Activities of the Chemical Engineering Department" by L. C. Jenness; "A Review of Pulp Friction Studies" by R. E. Durst; "Paper Coating Facilities and Research" by R. C. Chase; and "Development of More Efficient Methods of Aeration" by S. A. Zieminski.

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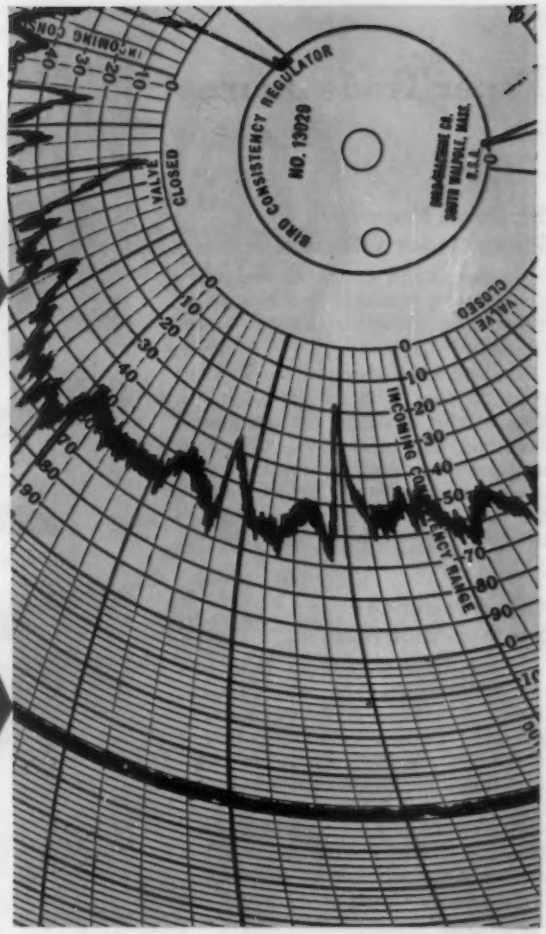

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St. Regis Promotes Rhinelander Officials

St. Regis Paper Co. has formed a new division and promoted two officials of Rhinelander Paper Co., a subsidiary of St. Regis.

Leaving Rhinelander for the St. Regis office in New York city are John E. Becker, vice president for administration, and Wilmer J. Davis, vice president for sales. They will head the pulp and paper departments, respectively, in the new kraft and converting products division of St. Regis.

CZ Announces Staff Promotions

Crown Zellerbach Corp. announces the following changes: At its Camas, Wash. plant James B. Palmer has been promoted from assistant bag factory superintendent to superintendent; William (Phil) Morgan was promoted from bag factory administrative assistant to assistant bag factory superintendent; James A. Butterick from specialty bag and finishing foreman to bag factory administrative assistant; Edward W. Agun, grocery bag foreman to specialty bag and finishing foreman; and John (Ed) Urie, bag factory, Weber machines, to grocery bag foreman.

John Denholme and Leo Newtown, assistant paper mill superintendents at West Linn, have been named paper mill superintendents (uncoated papers), West Linn.

Roland L. Sundstrom, technical assistant to the paper mill superintendent (tissue) at Camas, was named technical assistant to the paper mill superintendent (wrapping), Camas; while William O. Beaton, bag factory superintendent, Camas, was named technical assistant to the paper mill superintendent (tissue).

Rex Appoints Superintendent

Rex Paper Co., Kalamazoo, Mich., has appointed Hugh Warren paper mill superintendent. He was formerly associated with the Watervliet Paper Co., where he had advanced to the position of boss machine tender. He was with the Watervliet firm for 30 years.

Company officials said Mr. Warren's position is newly created.

Kenneth M. Hayes

John R. Cunningham

Taylor Reorganizes Vulcanized Fibre Dept.

Taylor Fibre Co., Norristown, Pa., has realigned the manufacturing and technical activities of its vulcanized fiber department and has placed each under a separate manager.

Kenneth M. Hayes, formerly manager of sales promotion and training, has been named manager of manufacturing activities.

John R. Cunningham, formerly overall department manager, assumes responsibility for managing technical and quality-control operations.

Mr. Hayes joined Taylor Fibre in 1949 as a chemist. He became successively laboratory supervisor, technical assistant in the plastic laminates department, purchasing agent and sales engineer, before being appointed manager of sales promotion and training earlier this year.

Mr. Cunningham joined Taylor in 1949 as a sales engineer. He was named assistant sales manager in 1953 and in 1955 became manager of the vulcanized fiber department.

Riegel Appoints Sales Service Supervisor

Riegel Paper Corp. has named Raymond M. Steinhauser supervisor of sales service, replacing John K. Boeck, recently appointed administrative assistant to Winthrop Endicott, manager of merchant and industrial sales.

Mr. Steinhauser comes from Riegel's Milford, N. J. mill where he was supervisor of product control, production planning and converting. Most recently he has been administrative assistant, packaging materials sales in the New York office.

Promoted at Diamond Gardner

Diamond Gardner Corp. has announced two promotions at its Lockland Ohio, carton plant.

Russel Whitt, a 33-year veteran with the company, has been promoted to cutting foreman. He had been cutting pressman.

David Garrison moved up to senior systems and procedures engineer. He joined Gardner in 1957 as an industrial engineer.

New Methods Manager at Sutherland

Sutherland Paper Co., has appointed James Stephenson manager of the company's methods department.

Mr. Stephenson has served as assistant manager of the department since 1953. He replaces Robert Breckenridge, recently appointed general manager of the company's new division in Albany, Ga.

Mr. Stephenson joined the control department of the Kalamazoo Vegetable Parchment Co. in 1952.

Camplong Appointed at Catawba

L. W. Camplong, assistant purchasing agent for Bowaters Southern Paper Corp., Calhoun, Tenn., has been appointed traffic and purchasing agent for Bowaters Carolina Corp. at Catawba, S. C.

Smeltzer Elected Port Huron Treasurer

Richard S. Smeltzer has been elected treasurer of Port Huron Sulphite & Paper Co. He succeeds Seth L. Bush who died June 21.

Mr. Smeltzer, who was secretary and assistant treasurer now will have the duties of secretary and treasurer. There will be no assistant secretary or assistant treasurer.

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BETTER PAPER

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Now, the lowest grade furnish can be used for high quality paper! Even the least expensive stock that has been thoroughly cleansed with d-i LESTOIL results in perfectly finished paper . . . Yes, with d-i LESTOIL you can cut down the cost of raw stock and reap the profits of fine paper.

USE d-i LESTOIL IN THE KIER BOILER . . . to cleanse rags, cotton linters and cotton mill sweeps of grease, oil, wax and all types of impurities and soil.

USE d-i LESTOIL IN THE PULPER OR BEATER . . . to de-ink newsprint, magazine and ledger stock . . . to emulsify and disperse wax, grease, oil, asphalt, adhesives, coatings and fillers from mixed papers . . . to defibre quickly and more thoroughly.

USE d-i LESTOIL . . . to prevent formation of insolubles in kier boilers . . . to keep soil from adhering to washers, wires and felts, and to prevent shut-down time in cleaning the system.

USE d-i LESTOIL . . . to launder perfectly (on or off the machine) all types of felts . . . lengthen felt life and use . . . to maintain desired texture.

For complete technical information and generous free sample write to:

ADELL Chemical Co.
HOLYOKE, MASSACHUSETTS

W. J. Montgomery W. P. Lawrence W. P. Taylor M. G. Lyon R. Forrest

Champion Announces Research Promotions

W. Phalti Lawrence has been promoted to the position of director of the Champion Paper and Fibre Co.'s general research and development division, and W. J. Montgomery will retire next month after 15 years in that post and 31 years with the company.

Other promotions and a new appointment in that division also announced include:

W. P. Taylor, promoted to assistant director of research and development.

Malcolm G. Lyon, promoted to associate director of research and development.

Robert Forrest, promoted to manager of engineering research and devolopment.

John R. Dam, appointed manager of papermaking research and development.

Roger Warner, promoted to assistant manager of engineering research and development.

These promotions are designed to fill out the top level research and development staff. This staff includes T. Edward Knapp, assistant director of research, in charge of patents and personnel.

Accomplishments of Champion's research and development division during the time Mr. Montgomery has directed it included the final perfection of one of the firm's most famous products, Kromekote papers. These papers, with their extremely smooth, glossy surface, opened the way for many advances in the printing industry and today are a hallmark for quality papers throughout the world. Firms in three foreign countries are now licensed by Champion to produce these papers. Other Champion processes developed under Mr. Montgomery are licensed in 19 foreign countries.

W. Phalti Lawrence, who replaces Mr. Montgomery, joined Champion's Carolina Division in 1930 as a research engineer, became director of pulp and by-products research at the Carolina Division in 1945; assistant general research director, pulp and by-products, in Hamilton in 1949, and assistant director, general research and development, the first of this year.

J. R. Dam R. Warner

W. P. Taylor, new assistant director of the division, had been manager of coating research and development since he joined Champion in 1940. He was superintendent of the lithographic department at R. R. Donnelley & Sons, Chicago, when he came to Champion.

Malcolm Lyon, associate division director, joined Champion in 1936 as mill production control and laboratory supervisor at the Carolina Division, Canton, N. C., and in 1949 became assistant director of pulping research.

Robert Forrest, engineering research and development manager, came to Champion in 1954 as assistant to the vice president, research and engineering. A native of Edinburgh, Scotland, he attended Leith Technical College and was graduated from Heriot-Watt College, in Scotland. Before coming to Champion he worked for Scottish, Canadian and American firms.

John Dam, papermaking research and development manager, and a newcomer to the firm, has a background that includes three years, 1943 to 1946, as a research associate with the Manhattan project at Oakridge, Tenn. The last 12 years he has worked at the Allied Paper Corp., becoming general superintendent in 1953 and assistant director of research and development in 1956.

Roger Warner, assistant manager of engineering research and development, joined Champion in 1939 as research engineer, and became group leader, electrical research and development, in 1941. He was born in Dayton, Ohio.

Washburn Named to Continental Post

Whitmore R. Washburn has been appointed manager of sales for converting and specification kraft paper at the Containerboard & Kraft Paper Division of Continental Can Co.

Mr. Washburn will be responsible for development and sale of converting paper for use in containers, coatings and other combination products. The grades of kraft to be offered will include those suitable for multi-wall sacks, asphalt, waxing, coating, foil laminating, gumming and tire wrap.

Continental's Converting & Specification Paper operation has recently been expanded with the addition of the modern No. 4 paper machine in the South. Set up in Continental's Hodge, La., paper mill, the new machine is adaptable to making high grade southern kraft converting paper.

Mr. Washburn has ten years of experience in the paper industry, the last seven of which have been in the sale of converter and specialty papers for Union Bag-Camp.

Heidbrink Succeeds McMahon at Hammermill

Robert F. McMahon, district sales manager of the Hammermill Paper Co. southern sales territory for the past nine years, has retired. He has been succeeded by Virgil E. Heidbrink.

Mr. McMahon had been a Hammermill employee since 1915. After thirteen years in mill and laboratory departments, he entered sales in 1928.

Virgil E. Heidbrink joined the Hammermill organization in 1956. Recently he has been assistant district sales manager for the southern sales territory. He now becomes district sales manager for area.

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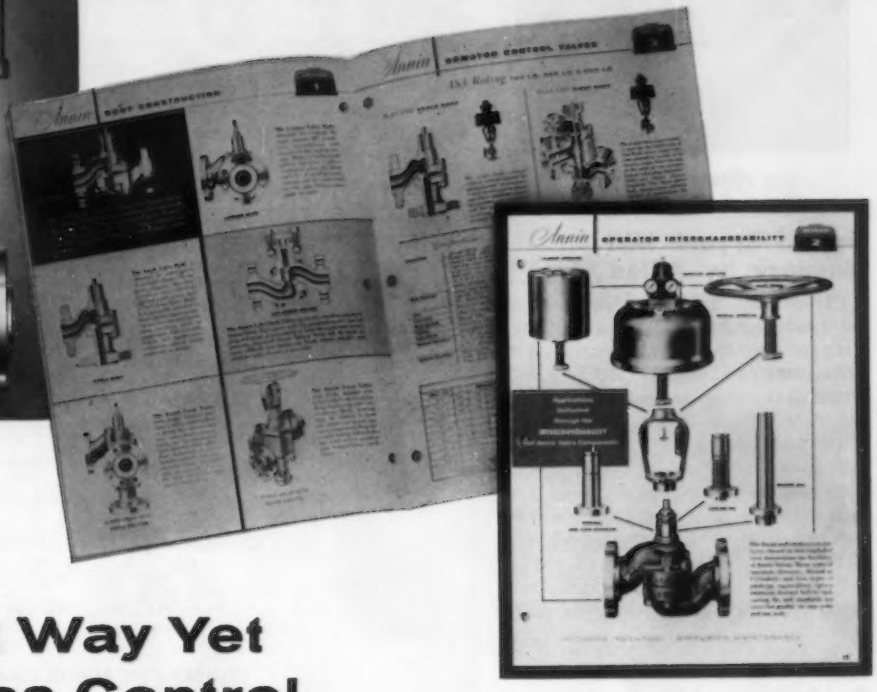

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ANNIN VALVES

Claude Bos

Named Bryant Mill Manager by Allied

Claude Bos has been appointed to the newly established position of mill manager for the Bryant coating mill.

According to James H. McClure, vice president in charge of manufacturing for the Allied Paper Corp., the creation of the new position is a further step in the de-centralization of management. The purpose of the move is to give each major division strong internal leadership to solve the particular problem of the division. The position of coating mill manager has already been introduced at the Bryant and King book mills.

East Texas Fills Carton Board Post

The East Texas Pulp and Paper Co., Texas, has appointed Robert Wicklund to the post of manager of carton board sales. He was formerly sales manager of the Pulp and Paper Division of Potlatch Forest Inc.

He will make his headquarters at the Eastex mill in Evadale, Tex. The Eastex mill manufacturers bleached board for conversion into folding cartons and containers for the food packaging industry.

Fibreboard Names Project Manager

George W. Burgess has been appointed project manager, manufacturing division of Fibreboard Paper Products Corp., San Francisco. For the past several years he has been vice president—manufacturing for Hawaiian Pineapple Co.

St. Croix Announces Organizational Changes

St. Croix Paper Co. has announced the following organizational changes:

Jefferson Farmer, who came with St. Croix April, 1956 as plant engineer after many years of service with Hollingsworth and Whitney Co., is being promoted to the position of service manager. His duties in this newly created position are the co-ordination of the service departments of the mill, namely, steam department, electrical department and plant engineer department, as well as operations of the yard.

John Vozella, with St. Croix since 1957 as assistant plant engineer, is being promoted to the position of plant engineer and will be responsible for the operation of the mechanical maintenance and engineering departments.

E. Palmer Ingalls, Jr., who came with the company in June 1958 as production manager, will be responsible for the production operation of the St. Croix Paper Company. The operating heads of the paper mill, sulphite mill, groundwood mill, and wood room will report to him.

The changes have been brought about by the forthcoming retirement of George Fuller, who has been general superintendent since 1935. July 1 Fuller was relieved of his direct operational responsibilities and for the balance of his time before retirement will be on consulting basis.

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

1958	July 5 52.0	July 12 64.5	July 19 85.4	July 26 88.5r	Aug. 2 87.8
1957	July 6 51.6	July 13 78.1	July 20 84.4	July 27 88.2	Aug. 3 89.9

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1958	86.9	89.5	89.5‡	87.4‡	86.4‡	86.2‡	—	—	—	—	—	—	—
1957	94.2	97.0	97.1	94.0	94.6	93.3	75.6	90.7	86.0	93.0	90.7	81.5	90.9

‡Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1951	1952	1953	1954	1955	1956	1957	1958
Year to Date	99.9	90.5	92.5	91.5	94.8	99.0	91.8	85.3
Year Average	98.0	88.6	92.3	91.6	94.0	97.9	90.9	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

1958	July 5 61	July 12 48	July 19 83	July 26 93	Aug. 2 93
1957	July 6 54	July 13 55	July 20 87	July 27 93	Aug. 3 95

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1958	80	86	88	84	84	86	—	—	—	—	—	—	—
1957	91	94	94	92	93	91	72	94	91	97	92	79	90

† *Percents of operation based on "Inch-Hours" reported on a 6-day basis.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING August 2, 1958	LAST WEEK ENDING July 26, 1958	CUMULATIVE TO DATE Jan. 1 to August 2, 1958
% Activity	93%	93%	84%
	Tons	*Tons*	*Tons*
Total Production	299,148	289,506	7,855,761
Liner	105,809	100,317	2,584,107
Corrugating Material	44,316	42,459	1,173,859
Chip & Filler Board	5,682	5,023	145,030
Total Containerboard	155,807	147,799	3,902,996
Folding	54,475	56,053	1,531,376
Set-Up	11,726	12,485	309,995
Special Food Board	26,141	24,614	753,463
Other	50,999	48,555	1,357,931
Total Boxboard	143,341	141,707	3,952,765
Total Orders	*Tons*	*Tons*	
Received	339,845	266,943	
Unfilled End of Week	465,523	427,875	

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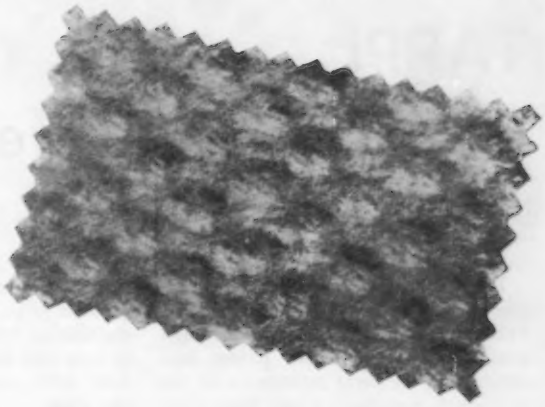
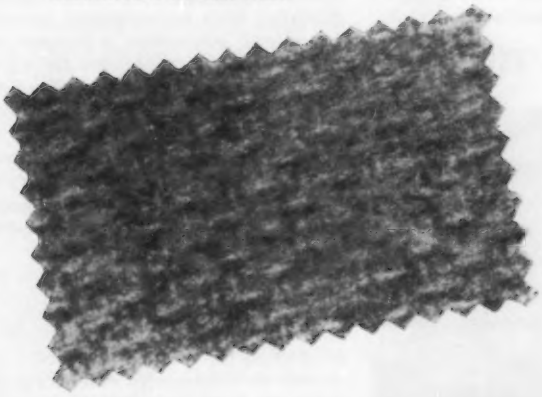
Here are just three of our present line of 300 proven styles . . . Each was developed to solve a particular problem in making heavy kraft . . . fine paper . . . board. All of our "standard 300" proven styles can be shown to you by a Hamilton Felt Service Salesman. If one of these "standard 300" Hamilton Felts won't solve *your* specific problem, we will be happy to design a Hamilton Felt that will!





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HAM FELTZ says:

"It's wonderful to be 100 years old and as modern as Shuler & Benninghofen."

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ENGINEERING STAFF OFFICERS AND CONFERENCE CHAIRMAN: V. Powers, secretary; J. M. Wilcox, conference chairman; J. R. Curtis, chairman; M. J. Osborne, vice chairman.

First Pacific Coast TAPPI Engineering Conference

For the first time TAPPI engineers met in the Pacific area, in late July. The meeting was notable for the high quality of the numerous papers presented and the large attendance at the individual meetings. More than forty papers were read covering almost every possible aspect of pulp and paper mill engineering. It is however interesting to note that nearly one half the papers dealt with paper machine design and operation.

Dr. Ward Harrison, TAPPI president, was featured participant in the Breakfast Entertainment.

In addition to the papers themselves the meeting included the following functions: an all day tour of Crown Zellerbach's Clatsop tree farm; a special breakfast with entertainment provided by a local committee; a banquet and a luncheon. Arrangements for all aspects of the conference were outstanding. J. M. Wilcox, Electric Steel Foundry Co., was general chairman of the conference, R. H. Smythe, Ray Smythe Co., was treasurer and Miss Kay Fralick, Morden Machine Co., was secretary.

President's Address

Dr. Ward Harrison, president of TAPPI and vice president in charge of production for Riegel Paper Corp., addressed the conference. After congratulating the local committee for their arrangements for the meeting, Dr. Harrison made two important announcements. He pointed out that TAPPI annual dues had remained unchanged for over 35 years but that increased services to members coupled with rising costs made it necessary to raise dues on all classes of membership beginning January 1, 1959. He explained the changes of job assignment of personnel in TAPPI's New York office as announced in *Paper Trade Journal*, August 4, 1958.

On the following pages we have endeavored to summarize some of the most interesting of the papers.

Boiler Controls for Multiple Fuel Firing

C. H. Barnard presented a paper entitled "Controls and Instrumentation for Multiple Fuel Firing." He pointed out that the ever increasing cost of fuel, together with improved equipment for the utilization of waste materials as fuels, has led to boiler furnace and auxiliary designs capable of burning several fuels simultaneously. This trend has resulted in the development of automatic control systems capable of meeting steam demands with full use of waste materials, and with the most economic use of other fuels. Controls for these services are called upon to perform many functions not required in a conventional single fuel boiler, such as selection of least costly fuel, and maximum use of waste fuel, at the same time keeping individual burners within safe operating limits.

Mr. Barnard said that irrespective of the type of fuel being used, the basic requirements for control are:

1. To maintain a constant steam pressure.
2. To maintain peak efficiency through control of fuel-air ratio.

In any given plant, there are other factors which must be controlled such as draft within the furnace. In the case of multiple fuels, added requirements are frequently encountered:

1. Maximum utilization of waste fuel.
2. Use of cheapest fuel combination.
3. Limit the ranges of the burning equipment for any particular fuel.

The utilization of the cheapest fuel usually involves computations resulting in manual adjustments to the control system by the operator. Use of newer computer techniques can make this an entirely automatic function, but only the very largest plants can justify the expenditure for costly equipment of this type at the present time.

Where waste or low cost fuels are available in varying quantities, bearing no relation to the demand for steam generation, it is frequently necessary to limit its use for short periods in order to keep the burners handling the supplementary fuel within a reasonable operating range. Generally, this is done automatically.

Many combinations of fuels, either prime or waste, may be utilized, and in nearly every instance standard control and instrument components are available for assembly into the systems required. These do not have to be limited to two fuels, and in many instances involve three, four, or more.

It is the responsibility of the control supplier to provide the necessary measurements and control devices to meet the requirements of the individual plant, whether they be economic or technical. Many times, a particular arrangement of auxiliary equipment can simplify the control system by making available more adequate means of measurement and control, and close cooperation between designers and control manufacturers can keep the over-all capital cost of a plant at a minimum.

The trend to multiple fuels is certain to continue in the coming years and the manufacturers of plant equipment, designers, and operators must work together if the ultimate is to be achieved.

DRYING COMMITTEE MEETING. Chairman, S. G. Holt; vice chairman, J. J. Verwayen; secretary, A. J. Cirrito.

Automatic Refining Control

Automatic refining control has a ready-made niche in our industry, said D. P. Michel of Bauer Bros. The requirements in practically all new equipment are for more precise automatic controls rather than for the handwheel type of adjustment. Papermaking still may be considered an art but more profit-conscious pulp and paper mills are relying on instruments instead of the taste, smell and feel of the operator, continued Mr. Michel.

"By automatic control, whether it be on a refiner, digester, jordan or paper machine, we mean the continuous sensing of variables and the resultant correction or compensation to maintain the variables within preset limits."

With the future in mind, Bauer is designing today control systems on individual machines that could be integrated with the complete plant control systems of tomorrow. Mr. Michel said that his company's couch vacuum control is another contribution in that direction.

The first commercial installation of this couch vacuum control system was at Otsego Falls Paper Mills. This mill produces nine point semichemical corrugating medium on the two paper machines. A Bauer disk refiner was put into the line in place of one of the jordans. A vacuum recorder-controller with high-low set points and a sampling circuit to reduce the possibilities of the system hunting or over-controlling was installed and wired to the hydraulic system of the refiner. The system was put on automatic control at the start-up. Despite the changes of primary stock freeness, the refiner was able to keep full control.

Control points on the vacuum recorder-controller were set so that a variation of plus or minus one-half inch of vacuum would send a correction signal to the refiner. This signal would make a small hydraulic adjustment which, in turn, would change the amount of work being done by the refiner. A timer would then keep the correction circuit inactive for a period of time. The length of this pause is rather critical. It is set equal to or slightly greater than the time that the stock takes to go from the refiner to the couch roll. Sheet quality could vary up to

twenty-five per cent before the change-over to the couch vacuum system. With the new system the quality can be maintained within two per cent variation and sheet tests have been increased, reported Mr. Michel.

Several other mills are using this same system on the larger Bauer pump-through refiners with very good success. One mill has set the high and low limits at plus or minus one quarter of an inch vacuum with the result that a much closer control of sheet quality is maintained. In mills where tonnages requires two or more refiners in parallel to process the stock, the couch vacuum control would still be applicable. Both refiners would respond to the signal in the same manner but an automatic override to prevent one refiner from taking all the load would be used. Such a system has been offered recently to several large southern mills.

One paper mill superintendent has been quoted as saying that the Bauer automatic refining control is a papermaker's dream. The reasons he gave were ease of operation, quick response to changes in stock and a better and more uniform sheet which means fewer breaks, better drying, more machine speed and better machine press action.

The benefits of the automatic system are important to the industry. So important, that equipment manufacturers must consider them as criteria in designing their new machinery. The pulp and paper industry is moving toward completely automatic control with the eventual possibility of computer supervision for the entire operation.

ENGINEERING ECONOMICS MEETING. Chairman, Jo R. Persons; secretary, F. C. Holmes.

Performance of Worm Gear Dryer Drives

W. E. Stone, Rice Barton Corp., pointed out that the use of worm gear drives on individual paper machine dryers is not new but that his company had developed a new drive of that type which offers a number of advantages over standard gear train types.

He said that many of the smaller mills, particularly in the fine paper grades, have been operating for years with older equipment, and are much less able than the larger mills to make the capital investment necessary to bring their machines up to date. Rice Barton has given much thought to the matter of developing up-to-date machine features at costs within the reach of the smaller paper manufacturers.

One such feature is the worm gear for individual dryer drives. This was originally intended to give the paper mills an enclosed gear drive for small machines at a cost appreciably below that of standard enclosed gears. It does just that and apparently much more.

On the larger machines, advantages other than price make these drives attractive. The front and back sides of the machine are equally open from a ventilation standpoint. The front and back side dryer frames are identical and the gear casings offer no obstruction as they are in line with the dryers and do not extend beyond the dryer faces to impede air flow from or into the "pockets". The dryer part is thus symmetrical about the machine center line and, the sheet should dry more symmetrically with good opportunity for better control of unequal drying.

An important factor in the matter of ventilation is the dryer spacing—vertical and horizontal, stated Mr. Stone. With the worm gear drive, there is no limitation on the relative dryer locations set up by the necessity for holding gear centers. With worm gears, horizontal spacing is a matter of length of the connecting section in the line shaft and the vertical spacing is varied merely by changing the length of the vertical connecting shaft.

Unexpected benefits were received in the first installation due to this locational flexibility. This was a twelve-dryer, two-deck section in a fine paper mill with eight more dryers to be added later to achieve the desired production. It was possible to space the dryers so that two felt rolls could be used between the dryers instead of one. This meant that the sheet and felt contacted and left each dryer almost simultaneously. The dryer areas with the sheet in contact without the felt were negligible. Previously, the tendency of the sheet to cockle at these poins meant running with low steam pressures with consequent low production. Under the new condition, however, the control of the sheet by the felt made higher steam pressures possible, greatly increasing the production over that anticipated.

On wider, faster machines the felt rolls must be of such a diameter as to preclude their use in pairs as this would require horizontal spacing wide enough to seriously cut into the sheet contact on the dryers.

There are a number of purely mechanical advantages accruing to this design. Back side accessibility is greatly improved and is nearly on a par with the front side.

There are also several points in favor of the separate, enclosed, identical gear units at each dryer. Only the power required to drive its own dryer passes through each worm gear; there is no lead from other dryers, except through the sheet or felt, and, by the same token, no cumulative backlash. Similarly load irregularities in a given dryer are not freely transmitted from dryer to dryer and, therefore, do not build up a synchronized pulsation.

One of the main reasons for discontinuing the use of open gears is the whine and ring of the tooth contacts at high pitch line velocities. The use of composition gears alternating with cast iron has raised the tolerable limit somewhat and a further improvement has been realized using smaller diameter helical gears at lower pitch line velocities totally enclosed and better lubricated.

With worm gear sets, there is the same noise and lubrication advantage of enclosed helical gears plus the inherent gain of the gradual tooth contact. The lower noise level of the worm gears is very noticable in a machine room.

Multiple Fuel Firing Steam Generators

M. O. Funk, Combustion Engineering Corp., said that the advent of turbulent suspension burning of bark has made possible the design of bark burning boilers with high availability and use factors as well as high over-all efficiency. Formerly, bark was a waste material to be disposed of as painlessly as possible; now it is a dependable source of energy. Bark burning was first restricted to separate boilers; now it can be combined with other fuels in a bark-power unit. A basic boiler room in a paper mill used to require three types of boilers; now it is feasible to use only two.

There are limits within which this new concept of multiple fuel furnaces can be applied, said Mr. Funk. These are defined by load characteristics, extent of bark preparation and regulation, proportions of various fuels to be burned, characteristics of the alternate fuels, and size of unit. Some of these limits are interrelated, and discussing them separately would not follow a logical pattern. The author described several modern applications of multiple fuel units and how these limitations affect their design.

Turbulent suspension burning of bark in combination with other fuels was illustrated with examples. There is a specific approach to the individual plant conditions, and, with thorough consideration of all the factors involved, there need be no question of successful operation. However, any one unit is not a universal approach for any set of specified conditions and fuels. Some features may be common to all units for this type of service, but there can be no compromise with a thorough evaluation of each feature against the individual plant requirements concluded Mr. Funk.

Economics – Yardstick of Profitable Engineering

R. C. Polk, Appleton Machine Co., pointed out that to interest top management in an expenditure for capital equipment these basic questions must be answered, i. e., Why buy it? How much does it cost? and How much money will it make? He said that his paper would aim at answering this last question.

There are over thirty methods for determining the economic justification for capital outlay, but authorities in this field agree that most of them are ramifications of the following four basic methods: (1) annual cost, (2) present worth, (3) rate of return, and (4) the payoff period, stated Mr. Polk. The methods outlined may be used for any type of project where a comparison of alternates is required.

Mr. Polk reviewed the four methods for some of the advantages and disadvantages of each, as follows:

Annual Cost Method, here the capital investment is reduced to an annual cost after an estimate has been made for the life of the investment. This is known as depreciation. In addition, for the proposed investment to appear profitable, some return should be realized. This time value of money, commonly known as interest, is the profit or return for making a cash outlay now which will not be returned for a long period of time. To this annual cost of the initial investment are added all the additional annual costs that are necessary to operate the new proposed project. Some of the annual costs to be taken into consideration are direct labor, maintenance, power, and direct materials to name a few. The above annual costs should remain consistent over the life of the project. This method is recommended because a return is contemplated for monies paid out now. In addition, the direct costs are usually available on an annual basis, which simplifies the gathering of data.

The present worth method equates all payments associated with the new project as a lump sum which, if invested now, with interest would provide exactly the funds needed to make all future disbursements. This method has all the advantages of the annual cost method plus the advantage of taking into consideration those annual payments which may not be required each year for the life of the project.

Rate of return method is not recommended for an analysis of a comparison of alternates. One of the shortcomings of this method is that it assumes that the apparent rate of return the first year is the rate of return throughout the life of the investment. As part of the investment is recovered each year, the rate of return is under-rated. This method is of value when an addition to a process is contemplated and it is desirable to know if the addition will yield the same return or better than that now being obtained from the process without the additional investment. If the return is less, why go to the additional expense?

The payoff period, is the most popular in our industry, although it has the greatest amount of shortcomings. Authorities do not agree on the time interval that would be considered an acceptable payoff period. Furthermore, this method does not consider any return on the investment, and the time value of money should not be neglected in the present day money market. It is useful when a special piece of equipment is required and it is known that it will be obsolete in a short period of time, long before it is worn out. If it can be paid for during its useful life, then it might be considered.

INDUSTRIAL ENGINEERING & MATERIALS HANDLING COMMITTEE MEETING. Chairman, J. M. MacBrayne; vice chairman, B. C. Kendall; secretary, H. S. Stoess Jr.

Anodic Protection of Alkaline Pulping Digesters

W. A. Mueller, Pulp and Paper Research Institute of Canada, reported that anodic protection can be used in stationary alkaline pulping digesters when oxidized black liquor is used for make-up. However, when non-oxidized black liquor is used the application of anodic protection is advisable only in mixtures where the black liquor addition exceeds a minimum level.

This study has been based on the measurement and analysis of polarization curves of steel under cooking conditions. The protection of a digester was investigated in a mill-scale experiment. For that purpose a steel cathode was suspended in the axis of the digester. A suitable reference electrode involving a modification of an existing design, was developed for continuous measurement of protection under the high temperature and high pressure conditions in a digester. Potential time curves were measured in the digester to determine the effect of the electrode current on the difference in potential between digester shell and liquor. The current required for anodic protection was measured in indirectly steamed cooks in various mixtures of white liquor and non-oxidized black liquor, and in directly steamed cooks in a one liquor mixture.

In agreement with the theory it was found, Dr. Muller said, that the current required for passivation is markedly decreased by:

1. Increasing the addition of black liquor,

2. Changing from indirect to direct steaming,

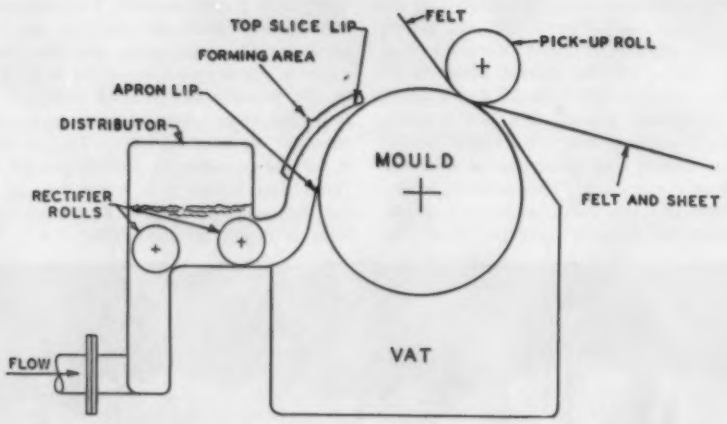
3. Replacing non-oxidized with oxidized black liquor,

4. Decreasing the concentration of unhydrolysed sodium sulphide,

5. Increasing the degree of overscaling.

W. C. GOVE, highly entertaining and inspirational banquet speaker.

Developments with the Suction Former



D. W. Curtis, Beloit Iron Works, reported on recent developments in the use of the suction forming equipment known as the Stevens Former. The basic principle of this machine is shown in the accompanying drawing.

Formation was shown to be carried out on a mold similar to the conventional cylinder mold. This is of open construction and carries both a backing and a forming wire. A low vacuum is maintained in the vat. The equivalent of a Beloit air pressure loaded head box, complete with its distributor and rectifier rolls, is used to bring the flow of stock and water in a completely dispersed and uniform manner to the formation zone. A stainless steel bottom lip is positioned close to the forming wire; and a special, curved top lip assembly covers a part of the forming wire immediately after the bottom lip.

Mr. Curtis said that when all details of proportioning and design are properly carried out, the resulting sheet is characterized by absence of streaks or other imperfections in formation, and by unusual uniformity in basis weight and caliper. The controls provide the operator with ready means for varying sheet strength characteristics in both machine and cross machine direction.

This type of suction former has been used in the Beloit package-type tissue machine. A number of these machines are now in service on toilet tissue, napkin stock, and toweling. Application of this type of equipment for towel, tissue and napkin stock have previously been described in *Paper Trade Journal*.

A modification of this arrangement replaces the forming wire with the equivalent of a fourdrinier wire, reported Mr. Curtis. The formed sheet is carried away from the mold on the wire and passes down to the couch position where either a pick-up type or suction type couch is used, depending upon sheet weight and other factors.

Mr. Curtis pointed out that the Stevens Former is also being used on cylinder type machines. The number of units required will depend on types of stock used and grades made. The Stevens Former was first tried out on the liner position on cylinder machines where the resulting uniformity of formation gave encouraging results from the point of view of appearance and printability. Where minimum use of top liner finish is desired, it appears to be preferable to use the Stevens Former for the underliner because the character of the underliner formation tends to show through regardless of top liner uniformity. Limited experience to date indicates that when the suction former is used in all vats, exceptionally good uniformity of basis weight, caliper and surface finish are obtained.

Mr. Curtis said that Beloit does not find any evident limitation of machine speed when using this equipment for producing paper and that speeds up to 1600 f.p.m. are now being run. He said that multi-cylinder machine speeds in excess of 1000 f.p.m. may be obtained in the near future.

Minton Vacuum Dryers

Design and operation of vacuum dryers was discussed by L. E. Hill of Weyerhaeuser Timber Co. Weyerhaeuser has more Minton dryers in operation than any other company and provided this type of drying equipment for its new pulp mill at Cosmopolis, Wash.

Mr. Hill pointed out that the rate of evaporation is a function of rate of heat input and vapor concentration immediately adjacent to evaporating liquid. When paper or pulp drying is conducted in an open dryer there is a probability that in some areas there will be a high vapor concentration, which will cause an increase in temperature of the liquid phase approaching the boiling point. In the Minton vacuum dryer the vapor concentration is held at a low value in all parts of the dryer. This results in a large increase in drying rate and a much lower maximum temperature of the pulp or paper web. In this type of equipment the dryers are enclosed in a pressure tight shell. The sheet enters and leaves thru rolling seals so designed that air infiltration is minimized. Vapor is condensed and non-condensible air is removed by a vacuum pump. Care must be taken to avoid too rapid evaporation at the wet end dryers.

When management plans a new pulp mill, said Mr. Hill, the selection of a Minton for the drying of pulp will be complicated by details which have been discussed and others that now come to mind. The first cost is bound to be considered. Here you would imagine that the Minton would be at a serious disadvantage, but such is not the case. The purchase will involve an entire machine room containing a pulp machine capable of some definite capacity. The Minton requires about half the number of dryer rolls necessary in an open machine, and is consequently either shorter or lower or both. It does not need a basement or a hood. Machine room air supply and exhaust systems will be much smaller in the machine room where drying is done by Minton. All costs considered, the investment in each installation will total nearly the same.

In conclusion, the author said that mention must be made of the advantages which a Minton dryer provides in the quality field. It dries at a lower average temperature than an open dryer, and consequently the product suffers less loss of strength and brightness. The dried pulp is repulped more readily. During drying there is no contact between the sheet and large volumes of air, removing one possible source of fine dirt.

These advantages, coupled with its high capacity, efficiency in use of steam, freedom from climatic and weather variables, and efficient return of heat of vaporization make the Minton vacuum dryer an excellent machine for economical production of pulp and certain grades of paper.

Paper Machine Drives

L. A. Moore, Black-Clawson Co., said that with emphasis on electronics, automics and spectacular space control, one is prone to overlook the basic fundamental principles of our age and not recognize the developments and improved applications of long proven materials which have served us so well. Recent developments in flat belts have permitted many mills to extend the capacity of their machine. Taking advantage of higher belt speeds and narrower belt widths, greater horsepower with better control has been realized.

Comprehensive test work with V-belts, backed up with practical application, has given mills, demanding precision speed regulation, dependable installations with a speed regulation of better than 0.10 per cent.

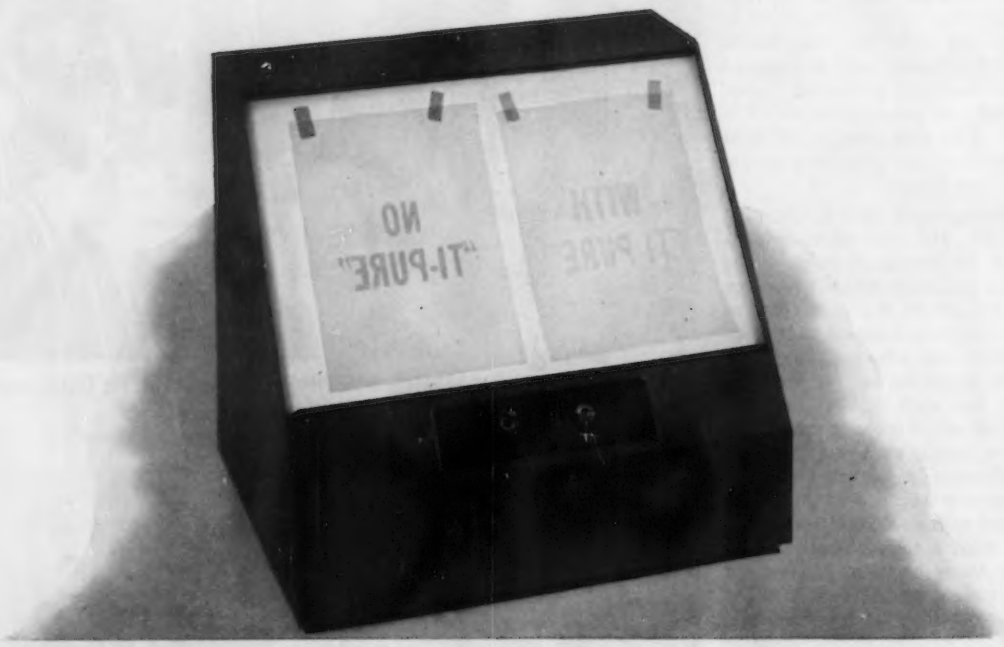
For those jobs demanding the ulti-

(Continued on page 50)

MECHANICAL ENGINEERING MEETING. Chairman, M. N. Davis, vice chairman, J. S. Mudgett; secretary, J. C. Harper.

PROCESS INSTRUMENTATION MEETING. Chairman, J. K. Powell; vice chairman, E. W. Prince; secretary, H. A. Sholl.

overcome show-through



SHOW-THROUGH RESISTANCE of "Ti-Pure" LW is demonstrated in the above illustration with sheet at right. Papers pigmented with "Ti-Pure" LW display minimum show-through . . . an important sales advantage for your lightweight papers, particularly.

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EASILY DISPERSED—Added to the beater, "Ti-Pure" LW displays even distribution throughout the sheet and good wet-end retention. To get maximum opacity you can rely on this even distribution throughout the pulp prior to formation of the paper web. Added at the calender or size press, "Ti-Pure" LW combines ease of dispersion with low water and adhesive demand to produce glossy coatings of high brightness and minimum show-through.

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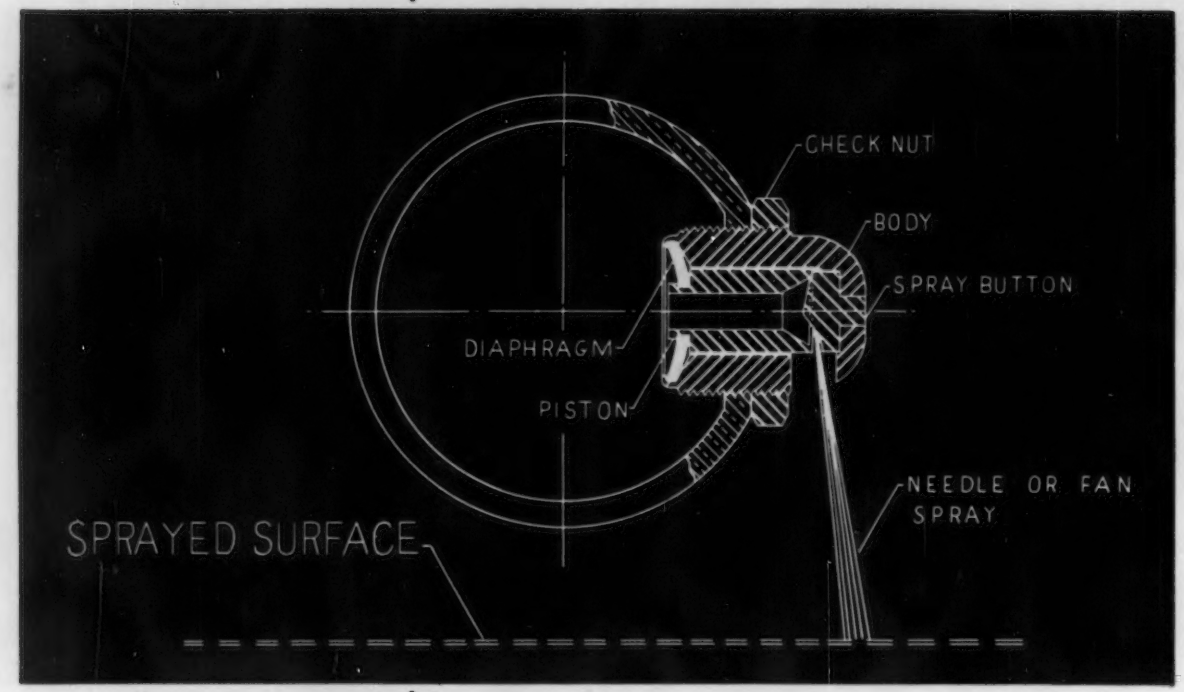

Basic design of the Lodding Nozzle in operation. Large, clear passages bring the white water up to the shaping parts. Small particles if lodged cause piston to oscillate and free them.

Non-Clogging Shower for White or Fresh Water

Lodding engineers, in search for a shower easy to clean when clogged, came up with a new design that is virtually non-clogging, now in successful operation.

Typical uses—foam-killing in head boxes, knock-off on fourdrinier wires, both inside and outside wire rolls, cylinder molds, screens, save-alls, felts.

LODDING ENGINEERING CORPORATION
WORCESTER, MASSACHUSETTS

Courtesy of The Glidden Company, Paint Division

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FOR BOTH CONVERSION AND ON-MACHINE PAPER COATING!

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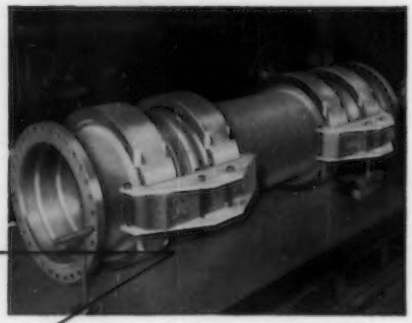

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this BIG 10-TON EXPANSION JOINT

36" carbon steel joint, weighing ten tons, for cross-over piping in central station.

and this small PRESSURE RISER CONDENSER

Pressure riser condenser, fabricated of Stainless Steel Type 347; 2 feet high; wall thickness equivalent to 4" Schedule 160S. Stainless steel pressure vessel, for atomic energy application, appears in background.

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WEST END's Sales Office Manager sales representatives and plant executives work together as a team manning a system that is, in our opinion, uniquely outstanding in the chemical industry. Their confidence in the efficiency of this system is reflected in the enthusiastic, helpful and friendly manner in which they promptly serve you . . . our customers.

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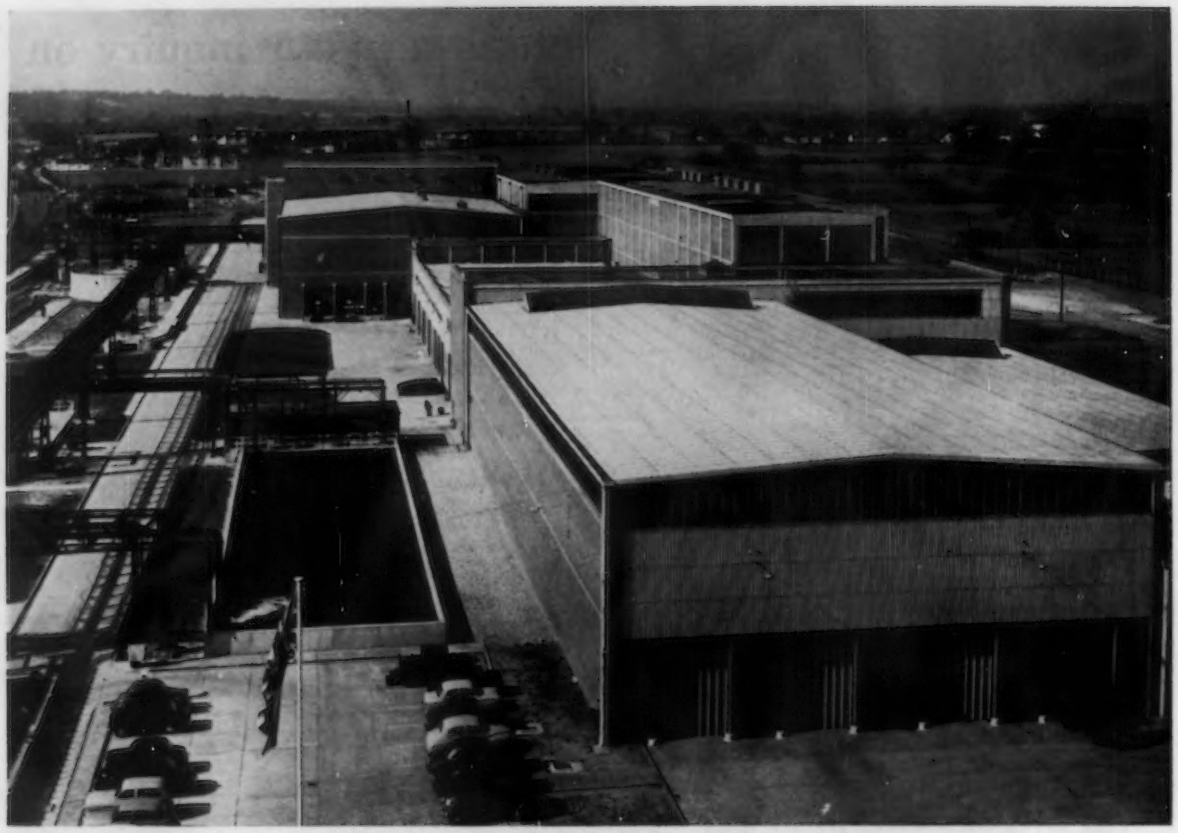


Reed Paper Group's new Colthrop mill at Thatcham, Berks.

COLTHROP'S NEW BOARD MILL

A complete description is given of this, the first completely new paper or board mill in Great Britain in more than 25 years.

Board mill operating staffs and engineers should be very interested in this detailed description of a completely new English board mill. This article originally appeared in the mid-summer issue of *The Paper-Maker and British Paper Trade Journal* **and the editors immediately made arrangements for permission to present this to our readers.**

The Reed Paper Group started production in their new North Board Mill of Colthrop Board and Paper Mills, Ltd. at Thatcham, Berks, earlier this year, almost exactly three and a half years after the order for the board machine had been placed.

This £5,000,000 project—Britain's first complete mill for 25 years—is entirely self-contained, including storage buildings, workshops, water services, effluent treatment plant, power station, messing facilities, and transport services in addition to the main production plant.

The forty-acre site is situated to the north of the original Colthrop mills and of the main London-West Country railway, and just off the London-Bath road.

The construction of the mill buildings, which are over 1,000 feet long, was started in May, 1955.

The mill, exclusive of the power plant, comprises five main buildings constructed as one unit, separated only by expansion gaps—raw materials are delivered at the western end and finished goods despatched from the eastern end.

Water for production requirements and the power station is drawn from the Kennet and Avon Canal—an automatically controlled pumping station delivers water to a 320,000-gallon storage tank. The pipelines for this water supply are carried overhead on specially constructed gantries some 3,150 feet in length.

The raw materials storage building is designed particularly with a view to reducing the fire hazard. The main walls are reinforced concrete and the building is divided longitudinally into three

main bays: one is used for the storage of mixed wastepaper, one for selected wastepaper and the third for wood pulp. Each bay is also sub-divided by concrete walls into "bins."

Road and rail transport facilities are extended into the storage building and each of the three bays has a Vaughan 2-ton capacity overhead electric traveling crane, which are used for unloading and also for feeding four Black-Clawson Hydrapulpers spaced in line across the eastern end of the building.

Stock Preparation Plant

Hydrapulpers

The Hydrapulpers prepare the stock for the four separate systems which are in use and are arranged for interchange of duties in an emergency.

The "middles" system is served by a 20-foot diameter continuous extraction Hydrapulper which is mainly fed by a heavy duty slat conveyor rising from ground floor level to discharge into the tub. A 16 foot diameter continuous extraction Hydrapulper is used for the preparation of the "underliner" stock and this, together with the 20 foot Hydrapulper, has steam injection to increase the rate of disintegration. Both units are fitted with junk removers and raggers.

Two 14 foot diameter batch type Hydrapulpers are used for the preparation of the "liner" and "backs" stocks, the former being pumped to a duo-cycling system, whilst in the case of the latter, the stock is pumped either to a cleaning system or direct to the unrefined stock chest.

The tops of all Hydrapulper tubs are level with the first floor which forms a platform at the end of the building and the spacious area allows a squeeze-clamp electric truck to transport and stack bales of wastepaper or pulp from weighing machines to the Hydrapulpers.

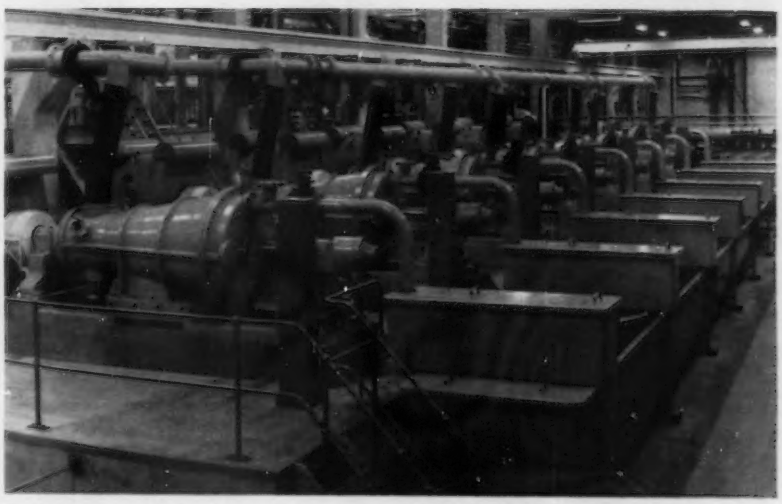
Hoods are provided over each Hydrapulper for cleanliness and also to eliminate unpleasant conditions.

Adjacent to each Hydrapulper at first-floor level there is a control station for the drive and pump motors and on each panel there is a master control circuit switch operated by a Castell lock which allows a person to enter a Hydrapulper tub in safety after first having removed the key from the lock.

The preparation plant building is of reinforced concrete framed construction with reinforced concrete floors and roof, the external walls being 11 inch cavity brickwork. The main preparatory plant equipment is at first floor level with the stock chests below, while a second floor covering only part of the main area houses the freshwater and backwater[1] tanks and also tanks for dilute alum solution, "size" solution and

This bay, one of three in the raw materials building, is used for storage of waste paper.

Hydrapulpers (there are four) in the stock preparation area are equipped with hoods.



Bank of seven Walmsley conical refiners with stainless steel outlet troughs.

Conical mixing boxes (one for each vat) for deaeration and dilution.

clay mixture, as well as some of the heating and ventilating plant.

Stock Cleaning

Stock cleaning in the case of the "middles" system is carried out by a battery of Vickery "Jumbo" Dirtecs which remove heavy materials and the stock discharges to four Black-Clawson Classifiners which in turn reject the lighter impurities. The accepted stock is passed to five thickeners or deckers manufactured by Watford Engineering Co., Ltd., where the consistency is raised from 0.8 per cent to about 3½ per cent, and the white water extracted in this process is returned to the 20 foot Hydrapulper regulating box to dilute the stock prior to delivery to the Dirtecs.

The rejects from the Classifiners pass to a disintegrator pump, which is a small steep angled conical refiner, and thence to a Black-Clawson Selectrap from which the accepted stock is passed back into the system for further treatment.

The "underliner" stock, after initial preparation in the 16 foot diameter Hydrapulper, can either be pumped direct to the unrefined stock chest or it can be diluted to 0.8 per cent consistency for cleaning by "Jumbo" Dirtecs and then thickened as for the "middles" stock.

Hydrafiners and Duo-Cycling Systems

The "backs" stock is pumped from the 14 foot diameter batch Hydrapulper to a storage chest, from which it can be treated by a Black-Clawson 4B Hydrafiner driven by a Mather & Platt 250 h.p. motor at 1,440 r.p.m., or else the stock can be passed direct to the refiners. The 4B Hydrafiner is fitted with "Duotrol" automatic plug control and the stock can be circulated through the Hydrafiner for a predetermined number of "passes" at a pre-set drive motor electrical loading before being pumped to the refiners.

This Hydrafiner and its associated chest and pump are on the ground floor with the control desk at first floor level. The desk incorporates all the necessary motor starters, a recording ammeter for the main drive and chest depth recorders, as well as a mimic which gives visible indication of the operating position of all the plant controls.

A complete Black-Clawson Hydrafiner duo-cycling system with a central control desk provides the main treatment for the "liner" stock which is first prepared in the 14 foot diameter batch type Hydrapulper where a weighed amount of pulp is treated with a metered quantity of water. The plant consists of three No. 6 size Hydrafiners each driven by Mather & Platt 350 h.p. motors at 490 r.p.m., all situated on the ground floor.

In addition, there is a duo-cycling chest and a blending chest, both being vertical cylindrical tile-lined units of cast iron sectional construction.

The Hydrafiners are fitted with "Duotrol" automatic plug controls, and the interconnecting stainless steel pipework is so arranged that series or parallel operation can easily be obtained with all or any two of the units.

The control desk is complete with a comprehensive mimic[2] and incorporates depth recorders supplied by Foxboro-Yoxall. It was manufactured to instructions from Black-Clawson after close consultation with Colthrop staff.

The remote controls provided allow the operator to set the Hydrafiner plug controls so that the units run on predetermined electrical loads, and recording ammeters, as well as depth gauge recorders, giving a clear indication of the work done on the stock, while a pre-set counter automatically controls the number of "passes" the stock makes through the Hydrafiners.

Duo-Cycling Chest

The duo-cycling chest is divided by a vertical mid-feather and at the start of each batch treatment, one half of the chest is filled with stock at 5½ per cent consistency.

A circulating pump is connected through a valved manifold to each half of the duo-cycling chest and the "passes" are effected by the pump emptying one half of the chest and delivering through the Hydrafiners to fill the other half. After the requisite number of "passes" the stock is automatically delivered to the blending chest and a metered quantity of water is added to reduce the consistency to 3 per cent or 3½ per cent. From here the stock is pumped to either one or other of the two "liner" unrefined chests.

The plate type valves for this duo-cycling system were supplied by Black-Clawson—those essential to the automatic action of the system are electrically controlled, pneumatically operated, while the infrequently used hand operated valves are fitted with limit switches to provide remote indication of the valve positioning on the control desk mimic.

Stock Chests

On the ground floor of the preparatory plant building there are eleven reinforced concrete tile lined chests, nine of these are agitated by Black-Clawson Class "L" agitators and two by propeller type agitators.

In order to conserve heat and improve working conditions, all chests are totally enclosed and are situated so that the pipelines to and from the plant above are as short as possible. All the stock pumps are of Black-Clawson manufacture, direct coupled to motors. Wherever possible, pumps and motors have been standardized to reduce the holding of spare parts.

Refiner Layout

The final treatment of the four different types of stock is by refining and there are seven Walmsley No. 4 size conical refiners each direct coupled to a 250 h.p. motor and driven at 365 r.p.m.

The stocks are delivered to a stainless steel compartmented distribution headbox at high level from which there is an individual connection to each refiner and this allows a wide variation in the use of these refiners, particularly as they are arranged for operation singly or in series.

The seven refiners are raised on a platform above first floor level and discharge into stainless steel troughs running along the front of the platform with connections from these troughs into the various machine chests below.

The refiners each have a motor control station comprising "stop" and "start" buttons and an ammeter, adjacent to the hand wheel operating the moving shell, whilst the main Igranic contactor switchgear has recording ammeters to give an overall indication of the stock treatment.

In front of the refiner outlet troughs there is a large Foxboro-Yoxall instrument panel incorporating chest depth level recorders and consistency regulator recorders, and a control desk for all the pump and agitator motors related to the refining system. The compact arrangement allows quick and easy control of the refining process.

Consistency Control

Consistency control equipment, supplied by Foxboro-Yoxall Ltd., provides control and recorders for all four systems before and after refining and this arrangement gives close regulation over a wide range. In addition, there are consistency indicators for the stock after the "middles" and "underliner" thickeners.

Close control of gland sealing water, etc., to avoid excessive stock dilution is obtained by the extensive use of Rotameters in all sealing or purge water pipelines.

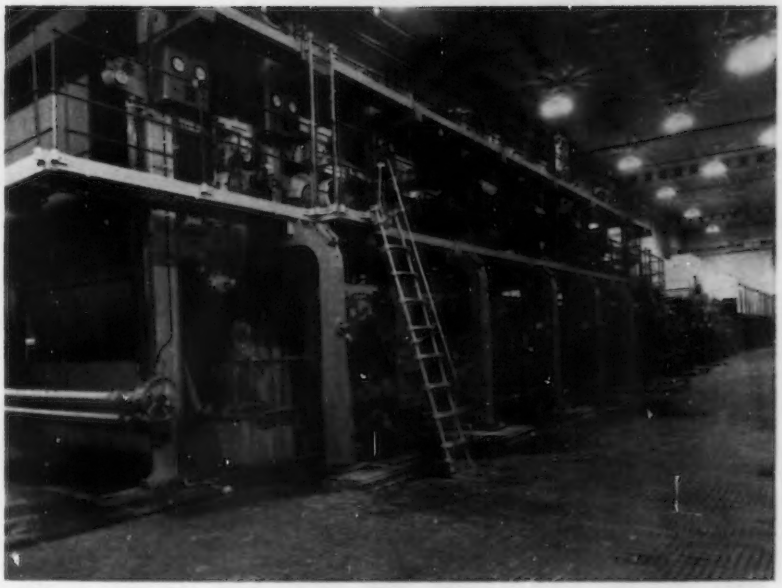
In the preparatory plant special attention has been paid to heating and ventilating the building, particularly as hot stock is likely to cause unpleasant working conditions. Carrier-Ross have supplied air heaters with input fans as well as extraction fans, producing comfortable working conditions.

Chemical Plant

A dissolving plant for aluminium sulphate blocks, situated at ground floor level, comprises three reinforced concrete asphalt lined tanks which are served by an overhead electric crane. The concentrated solution is delivered to high level dilution and storage tanks on the second-floor by acid proof pumps whilst polythene piping is used throughout.

An automatic plant emulsifies concentrated fortified rosin size with water and the resulting 5 per cent solution is pumped to high level storage tanks.

Facilities are provided for the continuous addition, by metering, of alum and size solutions to various points in the stock systems.

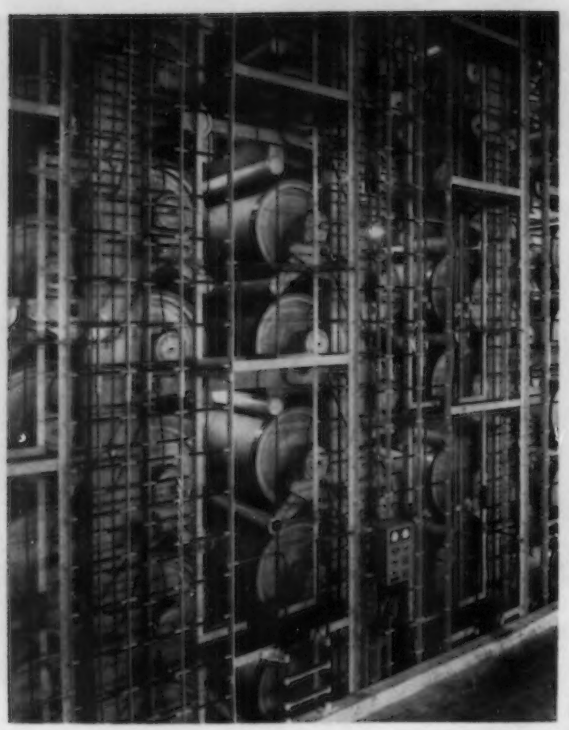


Wet end of the board machine looking towards the press section.

The Machine

The machine house is an impressive building 435 feet long by 75 feet wide (including the drive annex) by 62 feet overall height. The framework, floor and roof is of reinforced concrete construction. The drive annex runs the full length of the machine house and has an intermediate floor for the large ventilation plant. The machine headbox and screens are housed in an area to the

Press and cylinder section at the left is the Harland drive control console.



Dryers are arranged 16 or 17 high in eight stacks for a total of 130.

side of the machine house at the western end.

The basement type board machine constructed by Walmsleys (Bury) Ltd., and their associate Walker Brothers (Wigan) Ltd., has a trimmed width of 110 inches and is designed for a maximum speed of 600 f.p.m. A number of special design features have been incorporated at the request of Colthrop, many details having been developed by their engineering department.

The four stocks are delivered to a stainless steel compartmented headbox directly above eight Size 3A dual-drive Bird screens. The diluted stock discharges from the Bird screens into separate stainless steel outlet boxes and then to conical mixing boxes for deaeration and further mixing with white water.

Vat Section

The stock finally flows from the conical mixing boxes to the machine vat section through stainless steel or mild steel "Lithcote" lined piping into stainless steel flow spreaders connected to the first up-flow passage of each vat.

The vat section comprises eight 48 inch diameter cylinder moulds and vats —six of the contraflow type, and two so designed that they can be used for contraflow or uniflow operation. Four of the cylinder molds are driven and the remainder are prepared to receive drives.

The eight vats have cast iron box section sides giving a clean and neat appearance whilst an efficient system of mold air extraction has been incorporated in the construction of the vats, the fan and ducting being supplied by the Carrier-Ross Engineering Co., Ltd. Each vat is provided with a 20 inch diameter rubber covered top couch roll mounted on adjustable arms carried from the main framing which stands on the vat sides.

The vat draft pumps at ground-floor level are direct coupled to variable speed d.c. motors. The direct current supply is obtained from a 400 k.w. mercury arc rectifier.

Remote speed control for the pumps is provided at the front of each vat, and an indication of the speed of each motor is given on a composite panel at the end of the machine house.

Following the vat section there is a 28 inch diameter extractor roll and then a 30¼ inch diameter suction return roll leading to five primary presses mounted on fabricated steel box section frames located immediately above the vats.

In the fourth primary press position there is a suction press; but all five positions are so designed with cavity framing that a suction press can be mounted in any one of these.

Well placed platforms give easy access to the primary presses and special arrangements facilitate felt, roll and cylinder mold changing.

Main Press Section

The main press section comprises a first plain press, a second suction press and then a third plain press, all having 26 inch diameter rolls with granite top rolls in each position.

Vickery conditioners are used on the two press felts and suction squeeze rolls assist the cleaning of the top and bottom making felts, while motor-operated felt stretching gear is provided for all the felts.

All press loading, with the exception of the mold couch rolls, is by means of pneumatic cylinders controlled by independent pressure regulators and the control panels, which include load gages, are mounted on the front side framing adjacent to each press. The framing throughout the machine is of robust box section.

In front of the vat and press sections at first-floor level an acid-proof tile floor has been laid and this also provides a non-slip surface.

Vacuum Pumps

Nash type vacuum pumps for the suction rolls, conditioners and suction boxes are at ground-floor level and each is complete with a receiver separator, extraction pump, discharge separator and silencer. The water seal troughs for each discharge separator are piped together and a small pump re-circulates the gland and priming water to the vacuum pumps, while a ball float controlled freshwater make-up connection is provided.

The backwater "pits" below the vat section are in the form of reinforced concrete tanks standing on the ground floor. The "liner" and "middles" backwater pumping units removing water from these tanks are automatically controlled by the water level.

The connections from the tanks or "pits" for the various shower pumps are positioned to ensure constant supplies of water, and strainer boxes are fitted in the pump suctions.

As a safegard, a dump and overflow tank is provided and this is emptied by two pumps which are arranged to start and stop at predetermined water levels.

Long stroke hydraulic oscillators are fitted to all mold and felt shower pipes, with short stroke units for the press roll and pre-drying cylinder doctors (the latter type can only operate when the machine is running and therefore damage to roll or cylinder surface is avoided).

Drying Sections

The pre-dryer section comprises 26 five-foot-diameter, steam-heated drying cylinders arranged horizontally in two tiers with a Ross-Grewin vapor absorption system. The whole section is covered by a dryer hood with extraction

fans discharging to exhaust towers rising above the main roof level.

There are 130 three-foot-six-inch diameter, steam-heated drying cylinders in the main dryer section, arranged in eight vertical stacks. A standard cross tube type of vapor absorption system using fairly high velocity hot air is installed on the stack dryers. A steam-heated smoothing press having 24 inch diameter chilled iron rolls is located between the second and third vertical stacks.

Heating and Ventilating

Above the stacks there is a false ceiling of enamelled steel suitably heated by a flow of hot air, and extraction fans in the wall behind the dryers remove the humid air at high level.

The vapor absorption, heating and ventilating systems, supplied by the Carrier-Ross Engineering Co., Ltd., are installed above the drive annex. Air is drawn in mainly at one end of the upper part of the annex which acts as a large duct to feed the various fans. The main heating and ventilation at each end of the machine house at high level to prevent condensation is effected through air inlet ducts formed between the roof beams, with diffusion through the flat concrete ceiling, whilst extraction fans are provided in the end wall.

Steam to all air heaters is thermostatically controlled and, in order to economize in steam consumption, provision is made for the use of re-circulated air at certain points.

Lubrication and Steam System

The pre-dryer and stack dryer cylinder gears are provided with robust mesh type guards and a semi-automatic system of gear lubrication is working successfully. The back and frontside bearings on all the drying cylinders and the calenders are continuously lubricated by a circulating oil system which also includes a DeLaval purifier, an oil cooler and dual circulating pumps.

The steam circulating and condensate system for the drying cylinders was supplied by Reiss Engineering Co. Ltd., and the steam pressure is regulated by an "Arca" valve having a control panel at first-floor level, incorporating a steam flow recorder and pressure gages for the steam in the various sections.

Flash steam from the lowest pressure section is passed to air heaters and for the whole system there is a large condensate tank with duplicate pumps for the return of the condensate to the boiler house some 900 feet away.

Finishing Calenders

Two finishing calenders are installed, each having seven rolls, and, with the exception of the bottom rolls, all are bored for steam heating.

Vickery doctors are fitted to all rolls and five rolls on the first stack are fitted with water doctors. The load application to the top roll bearings is by levers, vertical rods and weights, whereas the rolls can be lifted individually or collectively by motor operation.

The machine reel-up is of the double arm drum type designed to wind reels up to 76 in. diameter.

Harland Drive

The machine is driven by a Harland interlocked sectional electric drive having an operating speed range of 100 to 600 feet per minute with a crawl-speed of about 30 feet per minute.

There are twenty-five separate driving units, each comprising a motor and gearbox on a combination bedplate and ranging from five to 80 h.p. output. The driving shafts are all fitted with flexible couplings and connect to the machine through special openings in the annex wall.

The spacious drive annex runs the length of the machine, and houses, in addition to the Harland drive, most of the contactor switchgear for the pump and fan drive motors. There are also two five-ton capacity overhead hand cranes, and the whole annex is kept under a slight air pressure to exclude dust and the humid atmosphere from the machine house.

A 775 h.p. synchronous induction motor drives the main 500 kw. generator and a flat-back open type circuit breaker switch-board supplies the section drive motors.

A control desk is situated in the machine house in front of the main presses and at each section of the machine there is a small control panel for the particular section motor. A visible and audible system is provided in front of the machine to give warning of any failure of a vital part of the drive or special ancillary equipment.

"Atomat" Gages

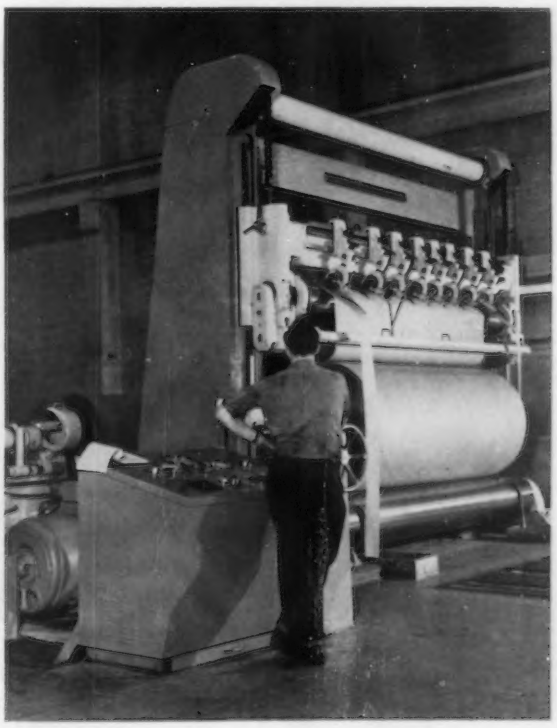
The board weight on the machine is continuously checked by means of Baldwin "Atomat" radiation gages installed before the first pre-dryer and after the calenders. At each position there are three measuring heads across the width of the machine and recording instruments give a clear indication of any change in basis weight, enabling immediate correction to be made.

The machine is served by three electric overhead double-crab cranes.

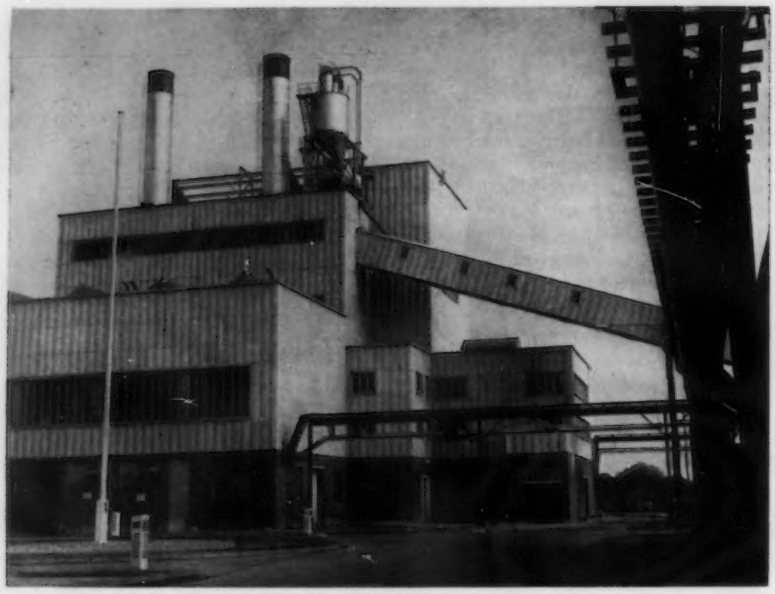
Slitter and Re-winder

A Masson slitter and re-winder is situated at the end of the machine at first-floor level and is fitted wih a hydraulic finished reel ejector followed by a special table, adjustable in height, and an Avery weighing machine with a platform flush with the floor and capable of weighing full width reels.

The drive for the Masson winder



Masson slitter and rewinder is equipped with roll ejector and lowering table.



West front end of power plant. Inclined conveyor carries coal to boilers.

consists of a Velotrol type grid controlled mercury arc rectifier supplying a variable speed d.c. motor giving an operating speed range of 200 to 1,600 feet per minute.

The pair of unwind stands are fitted with motor driven baring gear for rotating the parent reel when feeding the winder and also motor driven lateral adjustment for trim control, both these motor drives being operated from the winder control desk.

Below the winder at ground floor level there is a broke beater supplied by West End Engine Works, Ltd., driven by a 150 h.p. motor. This beater is situated in line with the machine and is able to handle all "broke" which arises, including the trim from the winder above.

Micro-strainer treats water from top and bottom whipper showers.

Finishing Room

Reels are finally transferred from the machine or the winder by means of a special motor driven trolley on to a balcony projecting into the salle building whence they are handled by an overhead traveling crane.

The finishing and storage building is of steel framed construction and has three crane bays, one of which is known as the service bay into which the balcony projects from the machine house first-floor. The overhead electric traveling crane in this bay serves a Masson duplex supercutter, a Masson simplex cutter and a small Thrissell slitter and re-winder, as well as transferring reels for storage prior to despatch.

The other two crane bays are used for storage, handling and despatch of finished reels. There is a fourth bay which has no crane, in which the Masson cutter stands, and this bay is used for sheet packing, storage and despatch.

The Masson duplex supercutter deals with full width machine reels and has a speed range of 150 to 700 feet per minute, being provided with two pairs of unwind stands similar in every respect to those installed with the Masson winder. An automatic layboy with hydraulic stack equalising device collects the sheets from this cutter and the trimmings are pneumatically conveyed to the broke beater.

Extensive use is made of pallets and stillages, with suitable electric trucks, for the storage and despatch of sheets. A loading dock constructed above ground level with a sloping approach of correct gradient for the electric trucks, is used for loading sheets on to vehicles.

At the eastern end of the building there are five large doorways to admit vehicles for loading, with electrically operated doors.

The Power Station

The power station is completely separate from the mill buildings and the 21 inches diameter process steam supply main is carried across to the mill on an overhead gantry which also carries the return condensate pipeline and the electric cables.

The building covers a ground area of approximately 12,000 square feet and is divided into three main sections, turbine house, boiler house and water treatment annex.

Fuel Handling

The fuel handling plant includes a "Rotaside" wagon tippler for handling railway trucks of 10 to 25-ton capacity,

discharging into an underground receiving hopper. The open side of this hopper is ramped for the discharge of end tipping road vehicles.

The discharge from the hopper is on to a 24 inch wide belt conveyor and a belt weigher is installed. A second inclined conveyor, fed by the first one, carries fuel to the bunkers where a traveling belt tripper is arranged to oscillate over the length of each bunker to spread the fuel evenly.

The feedwater treatment plant comprises a single lime reaction tank in which the raw water is pretreated by hot lime process; three pressure filters and three zeolite tanks provide after treatment to give zero hardness. The whole feedwater supply to the feed pumps is passed through a de-aerator.

Boilers

Two water tube boilers are installed, each having a maximum continuous duty of 88,500 pounds steam per hour at 525 pounds per square inch and 780° F. temperature at the superheater outlet. The boilers are of the three-drum vertical tube type with integral steam receiver between the boiler drum and the superheater inlet. They are of International Combustion Ltd. manufacture, stoker fired and each with integral superheater, economiser and draught plant. The furnaces are water cooled on the front and side walls.

Turbine House

The main electrical generating equipment is a direct coupled 3,000 r.p.m., turbine driven alternator set of the pass-out condensing type with an output of 7,500 kw. The alternator generates at 11,000 volts and can be paralleled with an incoming supply also at 11,000 volts from the Southern Electricity Board distribution network. The pass-out steam pressure from the turbine is manually adjustable from 20 to 60 pounds per square inch to suit the mill production requirements.

The main switchgear located at first-floor level in the turbine house is 250 MVA "QA" type and from this an 11,000 volt ring main is connected for the mill supplies.

Electrical Distribution

There are two sub-stations in the mill situated as near as possible to the load centres, and at each of these there are two 2,000 kva. transformers interconnecting the 11,000 volt and 415 volt switchboards. The main 415 volt type "AJ" circuit breakers supply the various multi-motor contactor switchboards.

Power factor correction is generally achieved by the installation of capacitors connected in a number of motor circuits and also by the careful adjustment of the 775 h.p. synchronous induction motor of the Harland drive.

A medium voltage ring main supplies lighting distribution boards, low voltage socket outlets and "welding connection points" which are distributed around the entire mill. The "welding connection points" are available for use by industrial vacuum cleaners and portable high pressure pumps.

Mill Lighting and Decoration

The mill lighting is of a very high standard and particular care has been taken since there is no natural lighting in the main sections of the mill. In the areas where height for fittings is in the region of 40 feet, the blended type of lighting is used, while fluorescent lighting is used in the other areas.

Full scale use of color in the plant makes the interior of the mill refreshingly bright and attractive. Strong accents are provided by the various large items of machinery and switchgear which are painted in bold but pleasant colors, while the surrounding pipework conforms, wherever possible, to the British Standards Specification for Pipe Identification, and recognition color charts are placed at various work centres.

Effluent Treatment

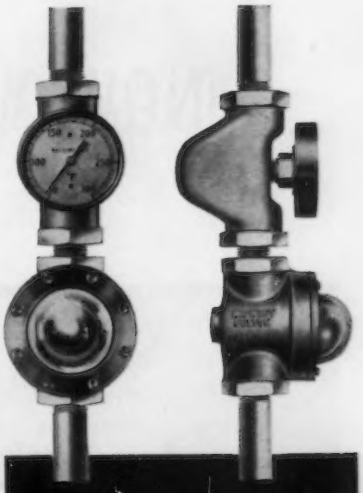
The effluent from the mill is passed to a clarification plant consisting of two 50-foot diameter Dorr Clariflocculator tanks with rotating scraper mechanism, the plant being capable of handling 600,000 gallons per day. The clarified water is then pumped to percolating filters for further treatment before being returned to the canal.

In addition to the main clarification plant there is a micro-strainer which has been specially installed to treat water from the top and bottom felt whipper showers on the machine.

The efficient operation of the mill is helped by the provision of cloakrooms and messrooms adjacent to all main centres of work. There are two well-equipped laboratories for control purposes, one in the preparation plant and the other near the finishing end of the board machine.

Workshops

A single-story workshop building is situated along the south wall of the machine house. Centered on a large stores, there are well equipped workshops for fitters, electricians, carpenters, blacksmiths and instrument mechanics. A variety of modern machine tools and testing equipment is installed and any normal maintenance or development work can be undertaken.



ARE ALL OF YOUR DRYERS DRAINING PROPERLY?

The best way to find out, day in and day out, is to have Ross Midwest Ball Sight-flow Indicators on your dryer discharge lines.

With these little sentinels on the job, a glance will confirm the proper condensate flow or warn you of an inadequate flow. Seldom, if ever, does the "window" cloud over and obstruct the view. All parts non-corrosive and good for years. All standard pipe sizes for pressures up to 125 pounds. Thousands in service on both wet end and dry end dryers.

Give pipe sizes when ordering.

ROSS MIDWEST FULTON CORP.
DAYTON, OHIO

A Unit of
J. O. Ross Engineering Division
MIDLAND-ROSS CORP.

Representatives:
James Brinkley, Seattle; Clark & Vicario, North Tarrytown, N. Y.; Ross Engineering of Canada Limited, Montreal.

NOW YOU CAN ADOPT RESEARCH

Until recently, most paper mills had no alternative to "hand sheet" research with its limiting drawbacks. But the many difficulties in translating "hand sheet" results to mill papers are largely eliminated now that Du Pont is using a miniature Fourdrinier paper machine to develop new paper dyes and dyeing methods.

By producing mill-quality paper in a continuous pilot-scale process, this machine gives results which closely approximate those obtained under mill conditions.

Proper Paper Formation. The paper produced on the Du Pont machine has essentially the same fiber direction as mill papers. This permits more conclusive results on a variety of papers—writing, printing, absorbent, various krafts, tissue, and others.

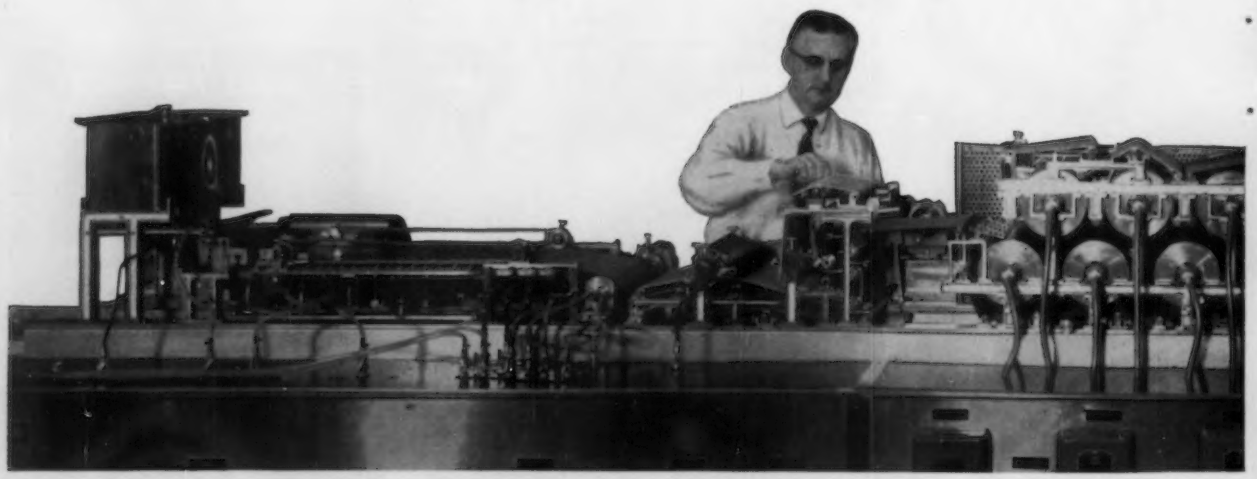
Uniform Physical Properties. Paper from the miniature machine is uniform in physical properties because the paper is uniformly produced throughout a run. There is much closer correlation between test data and the tensile strength, bursting strength, folding characteristics, sizing and finish of mill paper.

Accurate Color Reproducibility. Paper coming off the Du Pont machine is uniform in color from start-up to completion. This simplifies the development of color formulas which give accurate color reproduction in the mill.

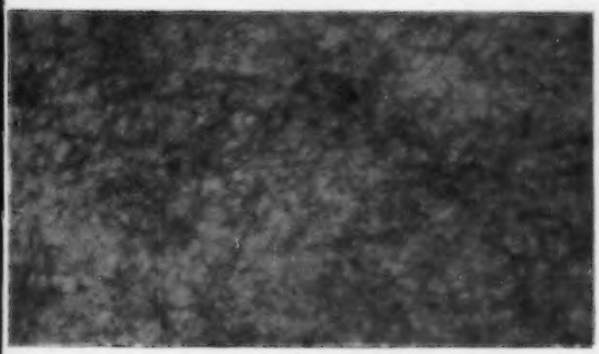
Realistic End Use Evaluations. The miniature paper machine produces paper of such uniformity that realistic end use evaluations can be made. These evaluations serve as a practical guide in predicting mill performance.

The miniature paper machine is one more reason why it pays to use the products and methods developed by Du Pont research. E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Department, Dyes and Chemicals Division, Wilmington 98, Delaware.

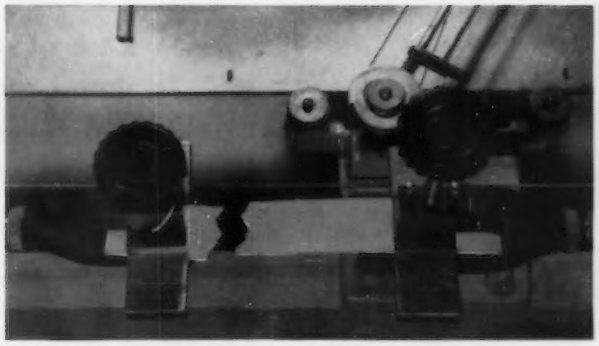
YOU GET MORE PRACTICAL IDEAS FROM DU PONT



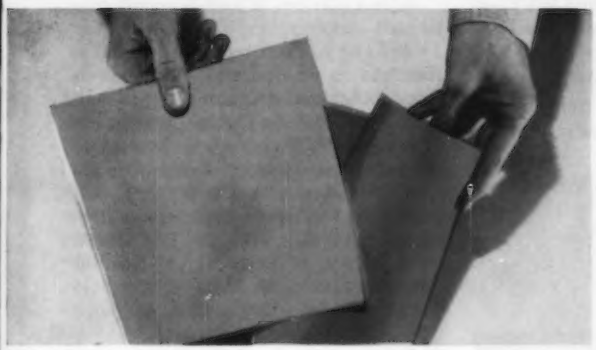
IDEAS WITHOUT THESE DRAWBACKS



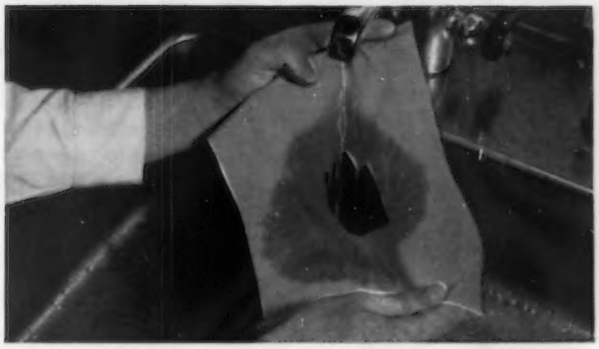
Difference in Paper Formation



Varying Physical Properties



Bad Color Reproducibility



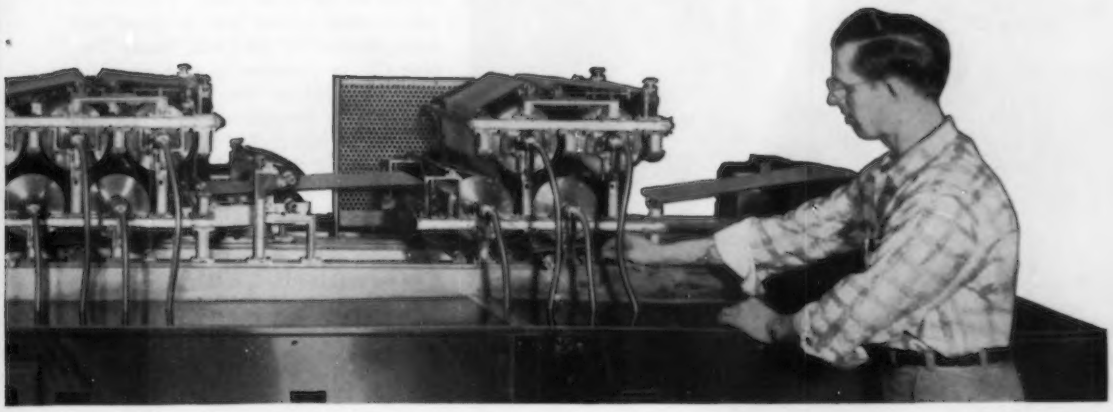
Poor End Use Evaluations

DU PONT

REG. U. S. PAT. OFF.

DYES AND CHEMICALS

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*



Unique Turbine and Control System Handles Wide Load Demands

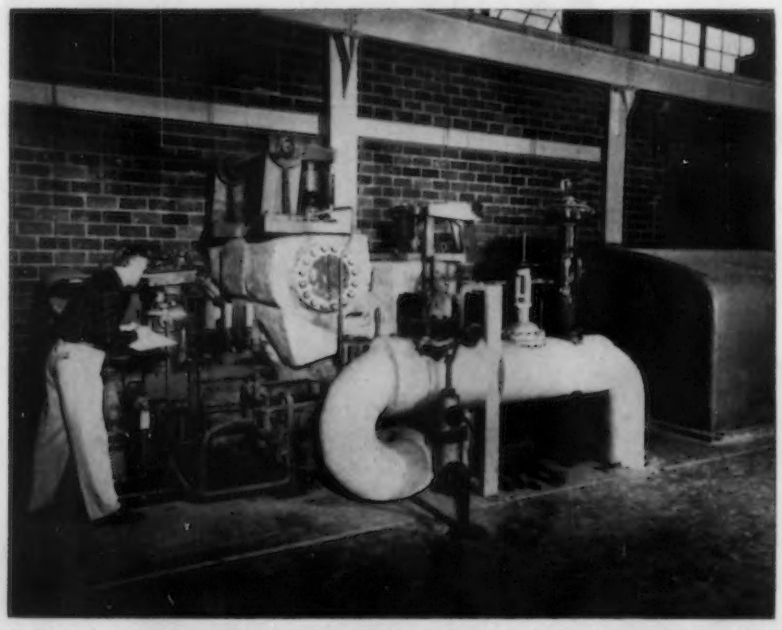
Lack of standby utility power, regular Sunday shutdowns and wide variations in load demand for steam and power posed special problems in turbine design for the new Thurso pulp mill.

Vincent S. Wagner

De Laval Steam Turbine Co.
Trenton, New Jersey

When the turbine installation was planned for the new 200-ton bleached kraft mill of Thurso Pulp & Paper Co. at Thurso, Quebec, several major problems had to be solved in reaching the final design. It was evident from the nature of these problems some unusual turbine design features and an intricate control system was required, if the available steam was to be used efficiently and economically.

Among the problems facing the new mill was the fact that it could not count on receiving electric power from the only utility station in the erea. The only other source was the neighboring Singer Co. plant. Willing, but not fully capable, this old plant, with its three rigid-frame 500 kw. generators of considerable vintage, could supply only limited lighting power, which it now does through a reduced voltage tie-in connection for emergencies only.



Turbine installation at Thurso Pulp and Paper Co. required solution of interesting problems.

Wide variations in load demands constituted another problem area. The 2400/4160 volt turbo-generator installation had to be designed with controls that could meet unusual steam and power demands. Load conditions at the Thurso mill will undergo wide changes as the mill shifts from weekend operations to full weekday operations, and from winter to summer operations. During the weekends, with the mill almost completely shut down, load demands fall off considerably, since there is only a limited steam and power need for lighting and operation of small standby machinery. Thus, as steam and electric power demands rise and fall in a widely changing pattern, the load variations are expected to be in the ratio of 10 to 1.

Solving the Problem

The final design of the turbine and control system tied in intricately with the various steam supplies and load demands of the new plant. The turbine and control system was designed and manufactured by De Laval Steam Turbine Co. in cooperation with Combustion Super-Heater Co., Ltd., of Montreal and Foundation of Canada Engineering Corp. The final design was made possible by the efficient and complete plant and process engineering data supplied by Thurso Pulp and Paper Co. John Aikman of Thurso, and formerly of Fenco, provided special assistance in making the project a successful one.

Turbine Design

De Laval designed an automatic ex-

traction turbine with two extraction openings, one uncontrolled and rated at 135 lbs. p.s.i.g., the other rated at 40 lb. p.s.i.g. controlled. Maximum uncontrolled steam extraction is 36,000 lbs. per hour. At maximum throttle flow, when extraction at the 135 lb. opening is zero, and the generator is operating at 7500 kw., maximum controlled extraction at 40 lbs. p.s.i.g. is 170,000 lbs. per hour. But once the uncontrolled extraction flow reaches 36,000 lbs. per hour at 135 lbs. p.s.i.g. the controlled extraction falls to 135,000 lbs. per hour for a 6700 kilowatt load on the generators, with only an infinitesimal amount of cooling steam being passed through the condenser.

A unique aspect of this turbine is the use of a restricted exhaust end, designed for a straight condensing flow corresponding to a generator load of 2000 kw., instead of the normal full-load exhaust end. The exhaust opening steam flow to the condenser is kept to 26,000 lbs. per hour. The exhaust diameter is only 30 inches, and the diameter of the extraction opening for the 40 lb. line 24 inches.

Steam Source

Steam is supplied to the turbine from a power boiler rated at 200,000 lbs. per hour, operating in parallel with a recovery boiler rated at 100,000 lbs. per hour. These boilers not only supply steam to the turbine but also supply steam at the same pressure to the paper machine drive, to a 125 lb. reducing station, a 40 lb. reducing station and to the sawmill. In addition, the 425 lb. p.s.i.g. boilers also supply steam to the induced draft fans on each boiler, the booster pump, feed pumps and the forced draft fan on the power boiler.

Steam Extraction

The high pressure uncontrolled extraction, rated at 135 lbs. p.s.i.g. is connected to a pressure reducing station rated at 125 lbs. p.s.i.g. Steam from this reducing station is used primarily by the digesters. When turbine loading makes the turbine steam insufficient, the pressure reducing station in the 425 lb. p.s.i.g. service line makes up the difference.

A header connects the 40 lb. p.s.i.g. extraction turbine outlet to the paper machine turbine exhaust and the pressure reducing station discharge. These supplies of steam are available to the evaporators, of the pulp mill, the bleach plant, the heating system and the sawmill.

It can be seen from the foregoing how intricately the turbine is linked with steam supplies and requirements of the plant. Also obvious is the fact that special control problems would result when shifts were made from reduced weekend operations to normal weekday loads, and changes from winter to summer loads.

Weekend Operation

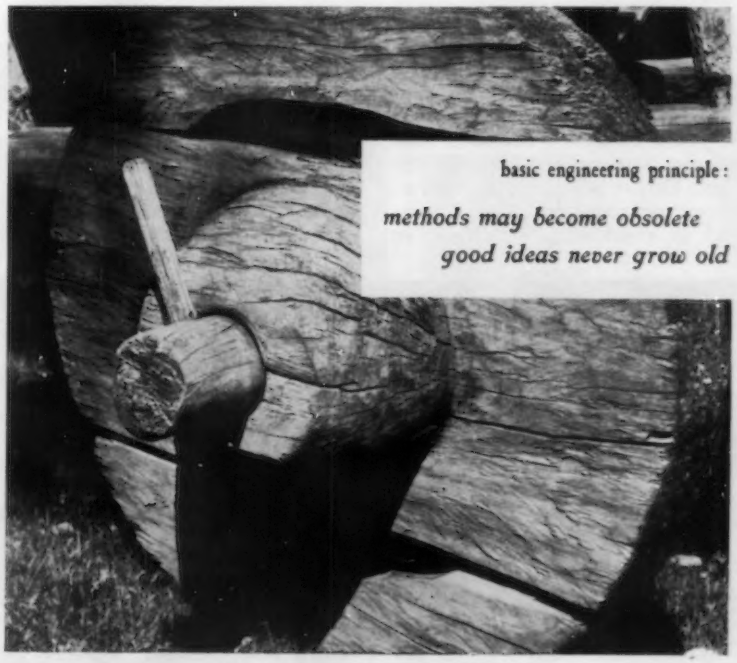
The weekend operations make up in hours a sizeable portion of the total operating week, which therefore dictated the use of a minimum size exhaust end for the estimated maximum straight condensing steam flow of 26,000 lbs. per hour to get the maximum load for the best steam rate.

For example, as the shift is made from the weekend load to the regular weekday loads, the operator must carefully watch the simultaneous build-up of electrical and steam loads. This must be done so that the former cannot exceed the latter and jeopardize proper control of the turbine unit.

The turbine is designed to carry full load at control extraction pressures, but if excessive demands for steam at the uncontrolled extraction point were to be encountered the turbine would not be physically able to carry the full electrical load. To prevent this from happening, a pneumatic position transmitter was installed on each servo motor to indicate when these motors are in the upper portion of their stroke. When this point is reached, a signal is transmitted to the pressure reducing station in the line from the 135 lb. turbine opening which throttles the valve and finally closes it. Thus, steam which had been extracted from the uncontrolled extraction point is diverted and made available to the 40 lb. p.s.i.g. extraction line and the condenser to obtain a greater load carrying capacity from the steam. The electric load will then be carried without difficulty. Such a system safely allows the advantages of a double automatic extraction turbine. This arrangement is possible only for this particular application, because of the nature of the operation.

Fluctuating Steam Demand

The De Laval control system had to be designed to meet the rapid fluctuations in the steam demands that often result when evaporators and digesters are being filled, even though the electrical changes are minor at the time. Instantaneous drawdowns of this type occur usually once every hour, and are in the magnitude of 60,000-100,000 lbs. per hour. The extraction regulator controls therefore must be set not only for accurate response for good steady state conditions, but also for instantaneous response to rapid fluctuations.



J. E. SIRRINE COMPANY • Greenville, South Carolina

Engineers Since 1902 — A DEPARTMENTALIZED ENGINEERING ORGANIZATION SERVING • BUSINESS • COMMERCE • INDUSTRY

The DRAPER Felt
DRAPER BROTHERS COMPANY
CANTON, MASS.

TAPPI Engineering Conference

(Continued from page 31)

mate in a mechanical drive, the differential units will provide the engineer a challenge of mechanical application and the paper maker a drive of his dreams. With push-button control he can inch forward or reverse, with or without the line shaft running, then experience a smooth acceleration to full speed with a speed regulation of 0.005 per cent or better of his operating speed regardless of the load variation.

The illustrations used showed the test set-up, plus principles of the tests to establish factual data and actual installations. With full utilization of the available tabulated data, the engineer can now apply mechanical drives to meet design needs from the smallest requirement to units of 1200 h.p. capacity and expect regulation from 0.0 to 0.005 per cent.

Training Maintenance Personnel

Training and education for maintenance personnel was the subject of a paper by R. G. Smith of Dow Chemical Co. This author's outstanding paper was particularly well received. Mr. Smith said, "when 'business is booming,' most companies wax enthusiastic over this subject. They're willing to take one of the newer promising men from the personnel or engineering department or even hire a young, inexperienced, personable college graduate and give him the task of setting up some sort of training for the plant. Usually maintenance and engineering training is only one of many phases of his responsibilities. Usually not too much attention has been given to *why* training is really needed at all. But the company is doing well financially, the shop superintendent or the plant engineer has been plugging for some training for his men for many years, so management decides it probably won't hurt anything to spend a little money on training and see what happens.

What does happen? About the time this young trainer is halfway organized and starting to launch his program, the company's business begins to lose some of its 'boom.' So management decides to greatly curtail the training program or eliminate it completely until the company can better afford it. So 'out the window' goes the training program—and 'out the window' goes a real opportunity for increased efficiency, lower costs, better morale, more capable men, less supervision, lower turnover rate, etc. Tough! But it just can't be helped, says the company!"

Mr. Smith urged his listeners to take a long range view of training maintenance and engineering personnel. Long range planning is considered essential in production, research, engineering, maintenance of plants and equipment, and many other areas. Training must be considered on a long range basis also if it is to contribute fully toward the success of the company. "Don't make your maintenance and engineering training an "on again—off again" proposition! It's too costly! No company can afford to do that in these times."

The author gave a brief description of the maintenance training program at Dow, as follows:

1—We have formal training programs in 25 trades with training agreements for each developed jointly by company and union, covering such items as: selection qualifications, class schedules, shop and field training provisions, job progression schedules, grading and rating procedures and method of handling failures.

2—Seven full-time men in maintenance education department, besides the author, plus about ten shop supervisors.

(Continued on page 52)

CHEMICAL ENGINEERING MEETING. Chairman, L. C. Jenness; vice chairman, A. W. Plummer; secretary, E. C. Bowen.

MORDEN

SPECIALISTS IN STOCK PREPARATION EQUIPMENT

Morden "Slush-Maker" for Pulping

Interested in higher quality production—worthwhile savings in power and labor? The Morden catalog can give you the answers. Send for your copy today . . . ask us to visit you for an in-the-mill discussion of your requirements.

MORDEN MACHINES COMPANY

3420 S. W. MACADAM AVENUE • PORTLAND 1, OREGON

UNITED STATES REPRESENTATIVES—Northeast: Orton Corporation, Fitchburg, Mass.; **Midwest:** Dan B. Chapman, Appleton, Wis.; **South:** Brandon Sales, Inc., Greenville, S. C.

who devote part time to assisting with class instruction and administration of shop and field training.

3—We average about 150-200 men in formal training programs at any given time.

4—Classes vary in size from one to about fifteen men. All classes are on company time. Meetings run one to six hours per week.

5—The maintenance education building has several classrooms, laboratories, offices, and small auditorium.

He commented briefly on the union's role in training, and said labor can cooperate in many ways.

Drying Paper with Air

T. A. Gardner, Marathon Corp., described a new concept in paper drying developed by the author. This new concept incorporates the use of a large number of air nozzles held close to the paper web. Air is forced through the nozzles at high speed and temperature. The arrangement of nozzles acts on the moisture film to permit unusually large heat and mass transfer co-efficients without deleterious effect on the drying surface.

The forced air disturbs the moist insulating boundary layer over the paper on the surface of the web. With the moist insulating layer disturbed, evaporation is more complete. The moisture going into the air has a cooling or air conditioning effect, which facilitates evaporation even more. The moisture laden air is drawn off through a built-in exhaust system.

Uniform drying across the sheet, said Mr. Gardner, is a major advantage of the design. Other important features, he reported, were good thermal efficiency and ease of control.

The Gardner dryer is also used for drying coated paper and printing inks. Eight of these units are now in operation in this country. Rice Barton Corp. is sales representative for this dryer.

J. R. CURTIS, chairman, TAPPI, Engineering Division.

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Ladies Program: Mrs. R. Blakely Honeyman co-chairman, Morden Machines Co., Portland, Ore.; Dean Brosche, co-chairman, Corn Products Sales Co., Portland, Ore.

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Registration: Wayne Mitchell, chairman, Link-Belt Co., Portland, Ore.; Stanley Burkholder, U.S. Rubber Co., Portland, Ore.; Hugh T. Gardner, Buckman Laboratories, Inc., Portland, Ore.; R. A. Goodwille, Beloit Iron Works, Portland, Ore.; C. H. Hoffman, Link-Belt Co., Portland, Ore.; Frederick H. Ihenburg, Draper Bros. Co., Portland, Ore.; Robert W. Lull, American Cyanamid Co., Portland, Ore.; Paul J. Pernice, General Dyestuff Corp., Portland, Ore.; William M. Scales, Link-Belt Co., Portland, Ore.

Woods Trip: George Schroeder, Crown Zellerbach Corp., Portland, Ore.

Breakfast Skit: Douglas B. Armstrong, co-chairman, R. T. Vanderbilt Co., Portland, Ore. ; John L. Ayres, co-chairman, E. I. duPont de Nemours & Co., Inc., Portland, Ore.; E. G. Drew, Drew Engineering Co., Portland, Ore.; Ben E. Natwick, Appleton Wire Works, Vancouver, Wash.; Hugh C. Osborn, Lockport Felt Co., Portland, Ore.; Gordon Petrie, Black-Clawson Co., Portland, Ore.; Ray Smythe, Ray Smythe Co., Portland, Ore.; Robert H. Smythe, Ray Smythe Co.

Transportation: Gordon Petrie, chairman, The Black-Clawson Co., Portland, Ore.; William S. Milne, Black-Clawson Co., Portland, Ore.; Donald R. Tourangeau, The Walter A. Salmonson Co., Portland, Ore.

CORROSION COMMITTEE MEETING: Chairman, L. A. Dela Grange; vice chairman, D. L. Johnson; secretary, G. M. Stevens.

Illustration courtesy of Magnavox Co.

RHOPLEX SHOWS QUALITY IN PRINTING!

Examine this advertisement closely—it's different from ordinary 4-color advertisements. Notice particularly how this paper shows outstanding definition and brilliance on its extra-smooth surface. It's due to RHOPLEX—because this paper is RHOPLEX-coated.

RHOPLEX is a Rohm & Haas all-acrylic emulsion binder for pigments. It has produced this paper's fine ink receptivity, its varnish holdout and its freedom from picking. Notice, too, there's no objectionable odor—you'll especially appreciate this if you're engaged in food packaging. If you're a papermaker, you'll welcome the mechanical stability of RHOPLEX resins and their trouble-free operation with your coating equipment.

Interested in getting—or giving—top value for your printing dollars? Write for *RHOPLEX Acrylic Emulsions in Paper Coatings.* You'll receive a valuable, informative booklet about RHOPLEX B-60A and RHOPLEX B-15, the all-acrylic binders for paper coatings.

Chemicals for Industry

ROHM & HAAS COMPANY

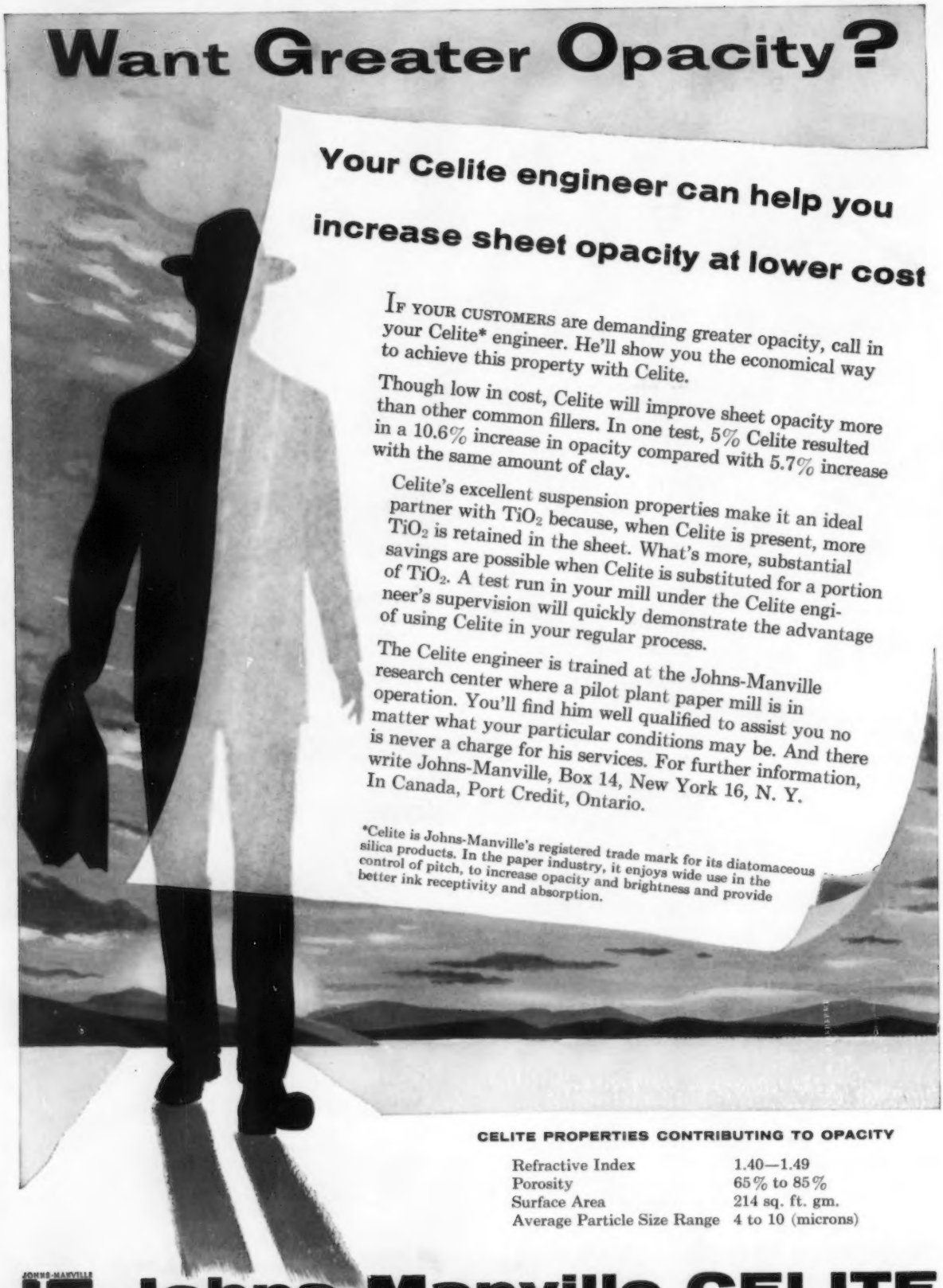
THE RESINOUS PRODUCTS DIVISION

Washington Square, Philadelphia 5, Pa.

Representatives in principal foreign countries

RHOPLEX *is a trade-mark, Reg. U.S. Pat. Off. and in principal foreign countries.*

Want Greater Opacity?



Your Celite engineer can help you increase sheet opacity at lower cost

IF YOUR CUSTOMERS are demanding greater opacity, call in your Celite* engineer. He'll show you the economical way to achieve this property with Celite.

Though low in cost, Celite will improve sheet opacity more than other common fillers. In one test, 5% Celite resulted in a 10.6% increase in opacity compared with 5.7% increase with the same amount of clay.

Celite's excellent suspension properties make it an ideal partner with TiO_2 because, when Celite is present, more TiO_2 is retained in the sheet. What's more, substantial savings are possible when Celite is substituted for a portion of TiO_2. A test run in your mill under the Celite engineer's supervision will quickly demonstrate the advantage of using Celite in your regular process.

The Celite engineer is trained at the Johns-Manville research center where a pilot plant paper mill is in operation. You'll find him well qualified to assist you no matter what your particular conditions may be. And there is never a charge for his services. For further information, write Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products. In the paper industry, it enjoys wide use in the control of pitch, to increase opacity and brightness and provide better ink receptivity and absorption.

CELITE PROPERTIES CONTRIBUTING TO OPACITY

Refractive Index	1.40—1.49
Porosity	65% to 85%
Surface Area	214 sq. ft. gm.
Average Particle Size Range	4 to 10 (microns)

JOHNS-MANVILLE PRODUCTS

Johns-Manville CELITE

PRODUCTS FOR THE PAPER INDUSTRY

NEWS OF SUPPLIERS

F. N. Roberts

M. R. Oberdorfer

National Starch Products Inc. has appointed Fred N. Roberts to the newly created position of coordinator, market research. Creation of the new post is tied in with the company's diversification in recent years and its growth into a multiple-division organization, a development which has greatly widened the scope of its market activities.

Mr. Roberts will serve as staff assistant to James Dillon, senior vice president in charge of long range planning and growth. In his new position, Mr. Roberts will coordinate all of National's marketing, sales planning and market research activities.

The Sandwell Organization, professional engineering and management service, has announced establishment of a new affiliate, Sandwell International, Inc., with offices in Portland.

The organization has eight other affiliates in Canada and abroad. Offices will be located in the Public Service building.

M. R. Oberdorfer, who has been with Sandwell since 1956, and formerly was president of St. Helens Pulp and Paper Co., will serve as resident representative.

John W. Bolton & Sons Inc., in order to accommodate its expanding machine knife sales and services, has added two new representatives. Melvin G. Novak represents the company in the central midwestern territory, making his headquarters at 9145 So. Troy St., Evergreen Park, Ill. James P. Montague covers the middle Atlantic territory, making his headquarters at 1938 Guernsey Ave., Abington, Pa.

Allis-Chalmers, Milwaukee, has appointed E. T. Cuddeback manager, general products division sales, Southeast region. He will maintain his headquarters in the firm's regional office in Atlanta. In his new position, Mr. Cuddeback is responsible for the promotion, planning and coordination of sales through the district offices.

Corrosion got you on the hook?

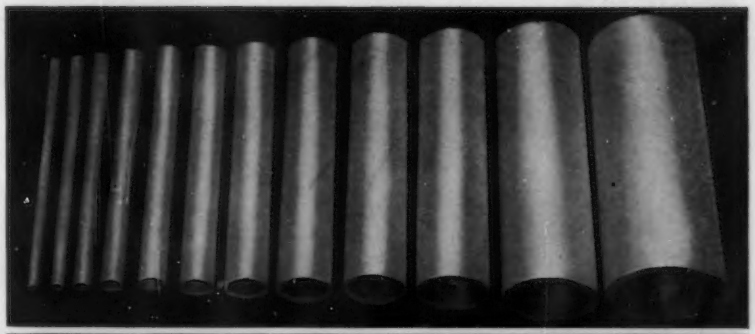
INVESTIGATE

Van-Cor

PIPE, FITTINGS, VALVES

made of Rigid, Unplasticized

POLYVINYL CHLORIDE



ADVANTAGES:

Resists Corrosion of Hundreds of Industrial Acids & Alkalies
Light in Weight (½ that of Aluminum)
Easily Installed; High Tensile Strength; Low Flow Resistance
Readily Formed, Machined, Threaded and Welded

TWO TYPES:

1. Chemical Resistant, NORMAL Impact (Van-Cor 1)
2. Chemical Resistant, HIGH Impact (Van-Cor 2)

AVAILABLE FORMS:

Pipe: ¼″ thru 12″ diam. (10 or 20 ft. lengths)
Fittings: ¼″ thru 12″
Valves: ½″ thru 3″
Sheets: 1/16″ thru 2″ (48″ x 96″)
Bar Stock: ¼″ thru 2″ (10 ft. lengths)
Custom Fabrications
Custom Extrusions

Request Complete Catalog containing detailed specifications, diagrams, flow charts, chemical resistance tables and installation data.

INDUSTRIAL DIVISION OF...
COLONIAL PLASTICS MFG. CO.
Subsidiary of THE VAN DORN IRON WORKS CO.
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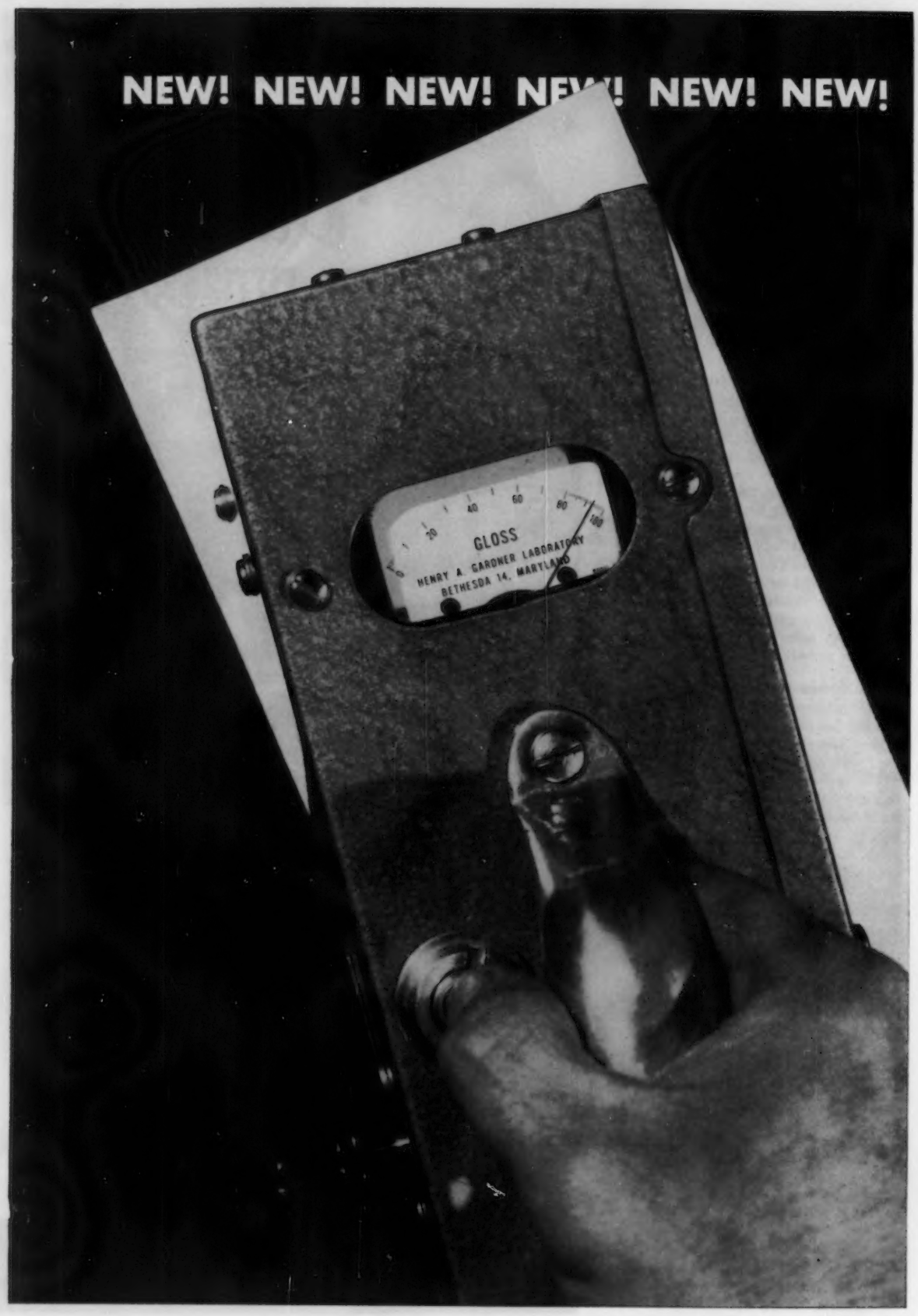
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GLOSS
HENRY A GARDNER LABORATORY
BETHESDA 14, MARYLAND

NEW! NEW! NEW! NEW! NEW! NEW! NEW!

A styrene butadiene latex that gives coated paper a super gloss of more than 90 points

DYLEX® K-85

DEVELOPED BY KOPPERS COMPANY, INC.

At coating speeds of better than 1100 feet a minute and with relatively low coating weights, gloss readings of 90 points and higher have been obtained on Koppers new coating machine.

Dramatic proof that DYLEX K-85 gives coated papers an ultra-rich gloss is clearly demonstrated in the striking photograph at left showing a gloss reading of 93 points. (Gardner glossmeter 75-degree head) This is far above normal gloss readings obtained from other styrene butadiene latices, and no excessive calendering is required.

The introduction of DYLEX K-85 is a boon to paper companies, because *now* you can get premium-quality high-gloss papers easily with modern high-speed coaters.

For more information on this startling new product, use the coupon at right. Literature and a free sample will be sent promptly.

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Olin Mathieson Starts-up Cinci Box Plant

Olin Mathieson Chemical Corp. has started production of corrugated containers at its new Cincinnati plant, it was announced by John Wold, general manager of the Cincinnati operation.

The 127,000 sq. ft. factory, formerly the site of the Lunkenheimer Co. plant, was leased on a long term basis in March, 1958. Production began this week after extensive plant additions and refurbishing.

The facility, which now contains an 85-inch corrugating machine and auxiliary equipment will employ 150 to 200 persons when capacity production of 30,000,000 sq. ft. of corrugated board a month is achieved. The plant output will be shipped to customers within a 250 mile radius of Cincinnati by both rail and truck.

Mr. Wold explained, that in locating in Cincinnati, Olin Mathieson is following a program of establishing corrugated container producing units in the heart of major market areas.

A similar plant with an area of 155,000 sq. ft. and a capacity of 30,000,000 sq. ft. of corrugated board a month is under construction in Joliet, Ill. Forest Products also operates three corrugators in West Monroe, La., as well as sheet plants in Kansas City, Kan., Essexville, Mich. and Harlingen, Tex.

Corrugated containers produced in Cincinnati are made from linerboard shipped from the corporation's kraft pulp and paper mill in West Monroe.

Hesse Names New Head

Sam B. Hubbard has been elected president of Hesse Envelope Co.

Mr. Hubbard has been with the Dallas, Texas, envelope manufacturing firm since September 1953, serving as vice president and director of sales. He was in the envelope manufacturing business in the Southeastern states for 25 years before joining Hesse.

Other officers named by the firm's directors include H. E. (Gene) Collins, vice president and assistant sales director; Stephen J. Hay III, vice president and secretary-treasurer; William F. Bumpass, assistant secretary, and Frederick Rossiter, comptroller.

Mengel Buys Box Plant in Memphis

Mengel Co., Louisville subsidiary of Container Corp. of America, has bought from Continental Can Co. a one-story modern plant in Memphis with 86,000 sq. ft. of floor space.

The plant will manufacture corrugated boxes and other corrugated products. It will also make waterproof boxes.

A Mengel representative said he expects the plant to be in full production by the end of this year. The purchased property includes about four acres of vacant land for eventual expansion.

The Memphis plant will be the eighth corrugated box plant in the Mengel chain. The others are at Louisville, Lexington, Ky., Nashville, Knoxville, Winston-Salem, N. C., New Brunswick, N. J., and Fulton, N. Y.

Manager of the Memphis plant will be A. L. Ahlers, formerly manager of Mengel's facilities at Fulton and recently assigned to Container Corp.'s box plants in West Germany.

Rochester Envelope Buys Menands Firm

The Commercial Envelope Division of Eastern Tablet Corp., Menands, N. Y., has been purchased by the Rochester Envelope Co. of Rochester, N. Y.

Announcement of the purchase was made by Howard H. Reinman, president of the Rochester firm, and George F. Wadleigh, general manager.

The announcement said 75 machines and key divisional personnel will be moved from Menands to Rochester.

Mid-West Firm Adopts New Name

The Mid-West Bottle Cap Co. Inc. has changed its name to Mid-West-Pak Corp. since it offers a more suitable identification for its present and future pattern of operations, according to J. Bruce Morford, president of the Belvidre, Ill. firm.

The company originally manufactured simple flat paperboard caps for milk bottles. It now makes a variety of paperboard and plastic drinking cups, containers and other food service items.

Smith Paper Polyethylene Coating Output Increased

H. P. Smith Paper Co., Chicago, Ill., has increased its polyethylene coating facilities with the installation of three new Frank W. Egan & Co. units—a single drum winder and two extrusion coating machines.

The Egan winder, of simplified design, is pneumatically operated and permits flying splices at speeds up to 1,000 f.p.m. Featured on the 80 inch Egan winder is a recently developed device which applies pressure to hold a starting re-wind core against the winding drum, thus insuring a tight roll.

To be used in conjunction with an extrusion coating machine, the winder will permit continuous operation of this phase of the coating process.

The larger of the two Egan extrusion coaters will be used to apply polyethylene coating to kraft paper and board. It provides for a 76-inch web and is equipped with a 6 inch extruder.

The smaller coater will take a web up to 48 inches wide and uses a 4½ inch extruder. It is more versatile than the larger model and will coat cellophane, aluminum foil, mylar film, glassine and tissue papers. Furthermore, this Egan extrusion coater is equipped with a turret-type flying splice unroll and winder and has a speed range up to 800 f.p.m.

With the addition of the two coaters to their existing hot melt coater and extrusion coater lines, Smith can now boast the largest extrusion coating capacity of any single plant in the world. The company was one of the first to produce polyethylene-coated papers after the process was introduced in 1948.

Bristol's New Plant Under Construction

Bristol Paper Box Co., Bristol, Va., has started construction on a new plant at the town's old airport. The 20,000 sq. ft. building is expected to result in doubling the plant's present working force.

John Dillard Elected President

John H. Dillard has been elected president of Dillard Paper Co. Inc. of Roanoke, Va.

He was elected by the board of directors to succeed Thomas J. Craig, president for 14 years until his death this summer.

M. R. Robertson was re-elected secretary-treasurer. Also general manager of all Dillard divisions in Virginia and Tennessee, Mr. Robertson will continue to manage the Roanoke division.

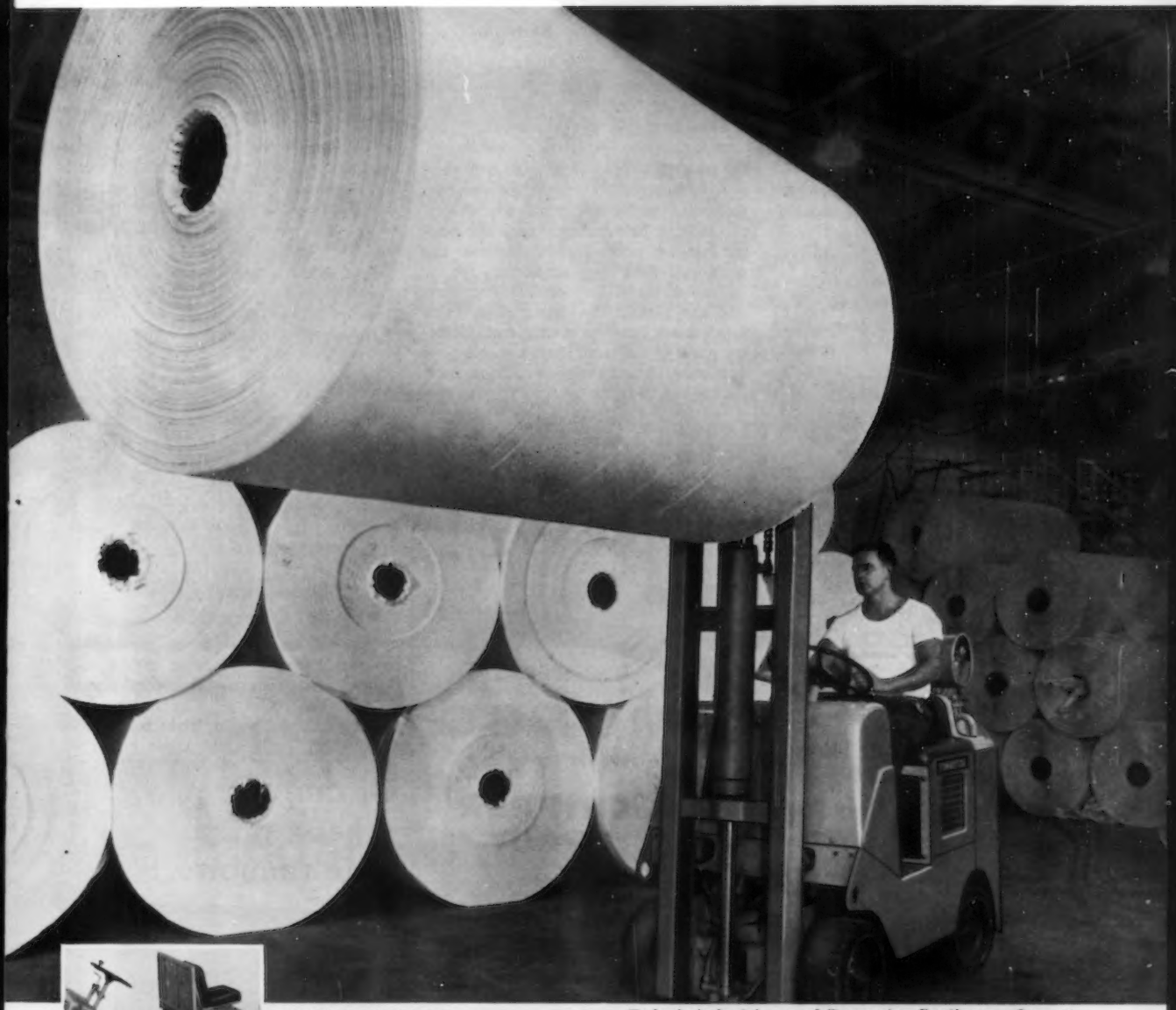

Photo Courtesy Scott Paper Co.

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Champion to Make Plastic Cups

Champion Paper and Fibre Co. is entering the disposable plastic cup and container field with a product which can be held in the hand while containing boiling liquid.

Champion officials announced the company has acquired from the Crown Machine & Tool Co., Ft. Worth, Texas, the sole licensing rights for making and selling "Thermokup" cups and containers in all states but Texas, Louisiana and Oklahoma.

The cup was developed by Crown Machine & Tool Co.

The most striking "Thermokup" feature is that the insulating properties of the plastic material reduce the transmission of heat or cold from the inner to the outer surface so efficiently that a cup may be held in the hand while boiling liquid is poured into it, without the slightest feeling of discomfort.

This marks Champion's first venture into the plastic converting field. The firm's main business comes from printing papers, with additional sizeable production of board for milk cartons, food packaging, etc.

Publishers' Paper Co. Adds Bag Plant

Addition of a paper bag plant has been announced by Publishers' Paper Co., Oregon City, Ore. It will be installed in the Third St. addition to the old Oregon City Woolen Mill building.

Kraft bags, principally those used by groceries, will be made from stock purchased from Oregon kraft paper mills to round out the company's line of paper specialties.

Employment will be given about 25 persons when the plant is operating within a few months.

S. J. Robinson, vice president and general manager said paper bag production would be a major addition to the company's production of newsprint, wrapping paper, fruit wrap, toilet tissue and other specialty items.

Intl.'s Fond du Lac Plant in Operation

The container division of the International Paper Co. located in the industrial park area south-west of Fond du Lac, Wis., now is in operation, according to Fred Negus, plant manager.

Jam it-Free it!

turn of an air valve frees log jams

MURCO "V" TYPE CHIPPER SPOUT

WITH PNEUMATIC CYLINDER OPERATED COVER

Air operated cylinder lifts spout cover vertically approximately 2¾" to free jammed logs—saves time . . . eliminates accident hazards . . . safer to operate.

CAN BE INSTALLED ON ANY MAKE OF PULPWOOD CHIPPER

NO SPOUT PLUGGING. Jam-ups eliminated by use of the specially designed hinged cover on the new MURCO V-Type Spout . . . hinged cover is operated by the double acting pneumatic cylinder with valve located convenient to chipper operator.

OPERATED FROM NORMAL AIR SUPPLY. Air cylinder operates at pressures from 50 to 100 lbs. per square inch.

V-TYPE SPOUT HOLDS WOOD FIRMLY. Holds any size stick firmly because of specially designed V-shape. Wood moves in a straight line with no side movement to disturb cutting. Sawdust reduced to a minimum; and chip quality improved.

HEAVY DUTY DESIGN FABRICATED STEEL . . . bed knives arranged for easy removal. Spout bed knives are precisely positioned in relation to disc knives resulting in a shearing action, producing quality chips, yet eliminating splinters and sawdust.

Write today for complete details . . . specify make and size chipper on which MURCO V-Type Chipper Spout with pneumatic cylinder operated cover is to be used.

SPOUT COVER RAISED VERTICALLY APPROXIMATELY 2¾"

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The old hands all use Kidder Slitters

Just entering the expanding punch card business?

Kidder offers you two accurate slitters of the highest quality you can get — one for high production slitting of card stock, the other for regular.

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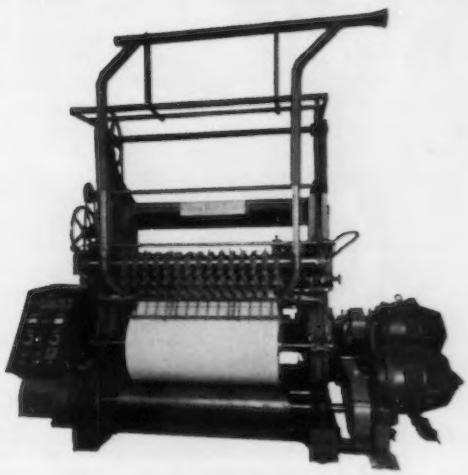
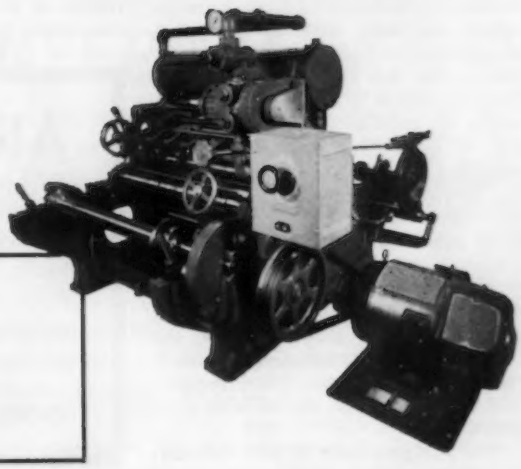
Both are accurate to plus or minus one one-thousandth of an inch (0.001″), holding your slitting to metal machining tolerances. Both use the shear-cut principle that results in completely severed webs, smooth edges, and *No Dust*.

For detailed specifications, contact KIDDER PRESS COMPANY, INC., Dover, N. H. or Special Representatives, the Gibbs-Brower Company, Inc., 10 Depot Plaza, White Plains, N. Y., and 400 Washington Bldg., Madison 3, Wis.; West Coast Representative, Bojanower Machinery Service Corporation, 5270 East Washington Blvd., Los Angeles 22, Calif.





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Letterpress, Flexoprinter® and Gravure Presses, Slitters and Rewinders

Clutch is Guaranteed in New Fork Truck

A 6000-lb. pneumatic tire fork truck, with a 12-month unconditional guarantee on the clutch, has been announced by Pettibone Mercury, 4700 West Division St., Chicago, Ill. The clutch is mounted in a horizontal position, making it fully accessible for plate change in 10 minutes or less. Wear is considerably less than on conventional installations because the clutch operates at less than ½ engine speed.

The new truck, identified as Model G-60, was designed for easy maintenance. Besides the clutch, particular attention was given to simplifying the lubricating system. Generous use of rubber mountings and sealed bearings eliminate many hard to get to pressure fittings. In addition to elimination of grease points, the rubber mountings absorb road shocks, thereby minimizing undue wear on parts. The power assisted clutch gives complete starting and inching control without the use of costly and complicated fluid coupling or torque converter. Power steering is installed on the truck as a standard feature. Maximum lift is 135 inches.

Vertical Battery Chargers Require Less Space

New vertical motor-generator chargers for electric industrial truck batteries, which reportedly save approximately two-thirds the floor space needed for comparable horizontal models, have been introduced by Exide Industrial Division of the Electric Storage Battery Co., Philadelphia, Pa. Design and weight of the chargers facilitate mounting them on girders and walls, a further floor-space saving.

To operate one of the chargers, it is necessary only to connect the charging plug and to set a control pointer on the front of the panel. Then, the charging current begins automatically at the proper rate and is controlled constantly throughout the charge. When the battery is fully charged, the machine automatically stops.

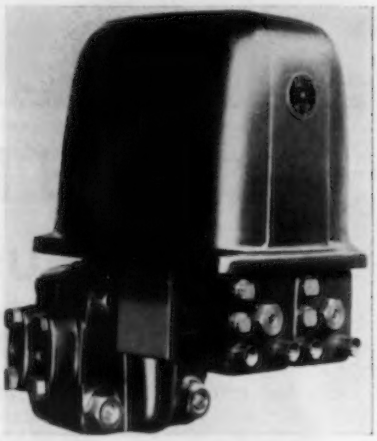
The chargers come in only four different physical sizes, yet provide a choice of 25 different ratings. Ratings range from 0 to 800 ampere-hours.

Force Balance Transmitters

A new line of force balance transmitters which measure and pneumatically transmit flow, differential pressure, level, and specific gravity over wide ranges, is now being manufactured by Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland, Ohio. Transmitters measure over a minimum range span of 0.2 inches H_2O under service pressures to 50 p.s.i.g., to a maximum span of 0-2000 inches H_2O under service pressures to 5000 p.s.i.g.

No viscous or other dampening devices are needed. Stability is maintained by a newly developed reset type booster relay.

Product Specifications P21-7 and P22-2 describing these force balance units, known as Bailey f/b-Line Transmitters, are available from the manufacturer.



Flow Rate Indicator Has Snap-In Metering Tube

Fischer & Porter's new low cost Ratosight flow rate indicator uses O-ring construction to seal the metering tube, thus eliminating packing glands and stuffing boxes. The new snap-in design simplifies cleaning and range changing, and a one-piece bronze body provides greatest

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INCORPORATED
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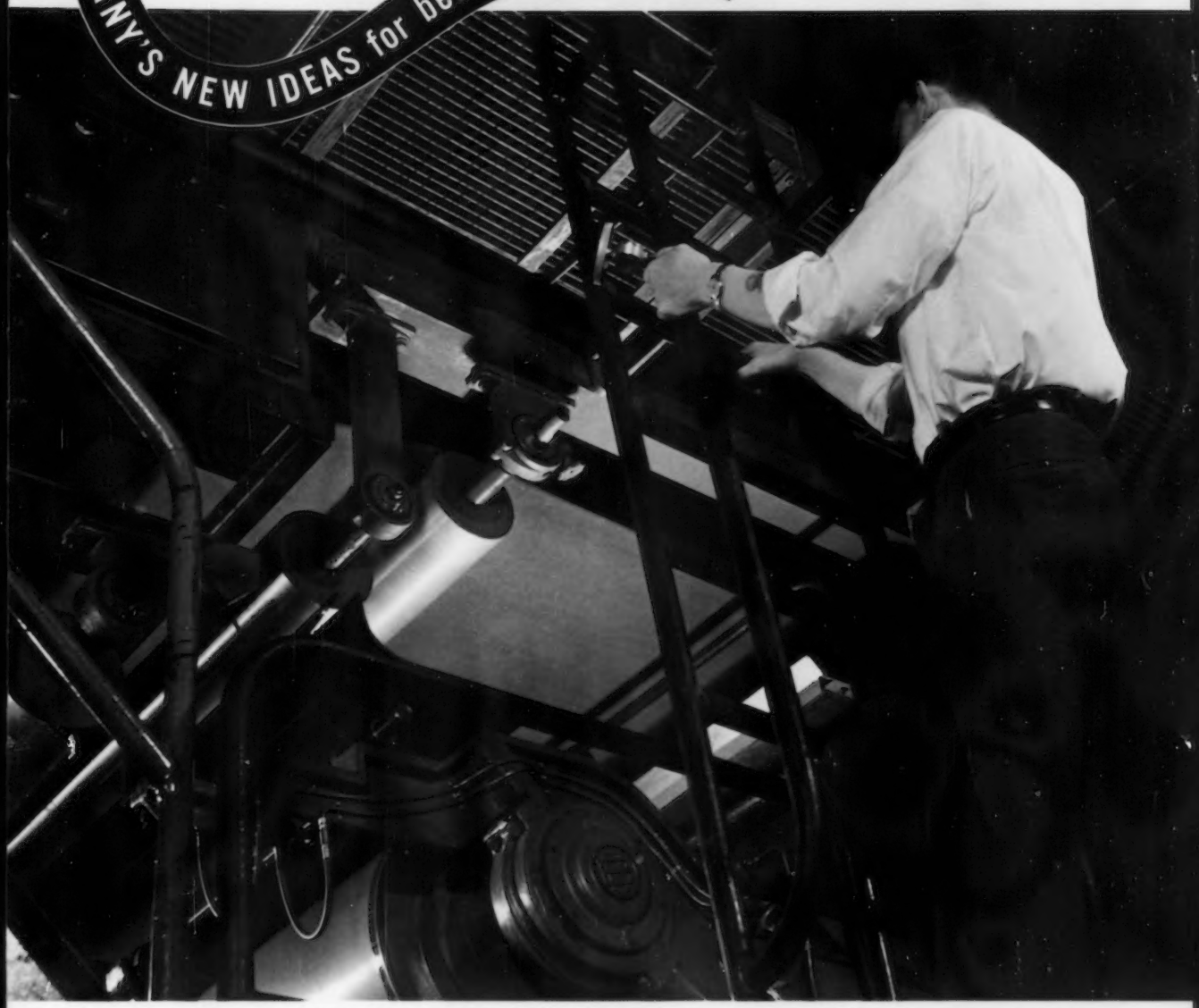
ALBANY'S NEW IDEAS for better papermaking



Albany Service Engineer checks felt installation during startup of The Ruberoid Co.'s new 150" trim roofing felt machine at Gloucester City, N.J.

HOW SERVICE ENGINEERING WORKS

The Albany Felt Service Engineer represents the ultimate in felt operation know-how. Unlike the Sales Engineer, who makes regular calls on your mill to take care of normal requirements, the Albany Service Engineer is the industry's top trouble shooter, always on call for emergencies. From consultation on machine design, through new machine startups and analysis of difficult felt operation problems, your Albany Service Engineer's years of specialized training and machine experience are available to help you operate more efficiently and economically.

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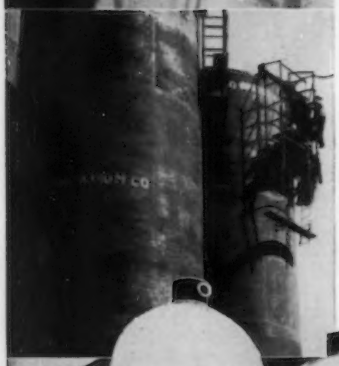

At Weyerhaeuser's new sulphite mill:

CB&I-built Digesters and Accumulators

are field erected and stress relieved

CB&I Field Services *went to work* at Weyerhaeuser's new 400-ton sulphite pulp mill—recently completed at Cosmopolis, Washington. The 7 CB&I digesters and 4 accumulators were stress relieved in the field. All welds were similarly checked by specially designed, non-destructive X-ray examination equipment.

By erecting as well as fabricating structures such as those completed at Weyerhaeuser, CB&I is able to offer its customers an exceptionally high degree of quality control between the shop and field. Our field service program offers experience, equipment and on-the-job know-how to handle your most specific requirements. Write our nearest office for the new bulletin on *Field Erection Services*.

Top: CB&I specialist uses portable X-ray machine for examination of seam welds.

Left: Automatic (patented) girth welder being adjusted for welding circumferential joints on accumulator.

Left: 60-foot high digesters are 17 feet in diameter.

Right: Four accumulators have 1,290 cubic foot capacity each.

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Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA.

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strength with least weight. The Ratosight is suitable for measuring flow rates of bearing lubricants, coolants, etc. and is available with a vibration-proof alarm for high and/or low flows. Extreme simplicity of design and rugged construction virtually eliminate the need for operating adjustments and maintenance. Since only three meter sizes are required to cover flow ranges from a fraction of a cubic centimeter per minute to 26 gallons per minute of liquid, or 65 standard cubic feet a minute of gas, inventory costs are low.

For more information, write Fischer & Porter Co., 797 Jacksonville Road, Hatboro, Pa.

Vertical All-Weather Motor

Louis Allis Co., 427 East Stewart St., Milwaukee, Wis., has introduced a new weather protected vertical motor intended for outdoor operation under all weather conditions. The motor meets NEMA Type II weather protected specifications and is manufactured in ratings from 250 to 2000 h.p., in both hollow shaft and solid shaft construction.

Bearing construction provides high thrust capacity; angular contact bearings are used to eliminate multiple bearing misalignment. Kingsbury Type Thrust Bearings are available for extra high thrust applications exceeding the capacity of angular contact or spherical roller bearings.

The motor is cooled by ventilating air taken from the surrounding atmosphere. To free this air of harmful moisture and dirt before it enters the heart of the motor, it goes through three 90° changes in direction, and is lifted vertically through screens.

Bulletin No. 2600 presents full engineering information, including cutaway views of the motor's mechanical construction and airflow. Request a copy of the bulletin directly from the manufacturer.

Miniature Gear Motors for Remote Control

The SM-5 Shaftrol a new high torque, shaft mount, control gear motor, is announced by The Jordan Co., 3235 W. Hampton Ave., Milwaukee, Wis. The motor has a hollow output shaft and mounts directly on the driven shaft to replace handwheels, cranks or levers. It thus permits manufacturers to offer remote or automatic control as an optional feature on their equipment.

Designed for high reliability, but offered reportedly at about half the cost of equivalent models delivering the same torques and speed, the SM-5 is available with gear reductions of two to four stages with ratios from 80:1 to 1600:1. Precision hobbed and hardened gears

provide a continuous duty torque rating of 75 inch pounds. A separate gear train drives the potentiometer.

Standard Shaftrols are single phase 110 volt, but 2-phase, 3-phase and dc Shaftrols are available. Larger models deliver torques to 800 inch pounds.

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Designed for the Paper Industry

6 Reasons why you should give us a call on your next job

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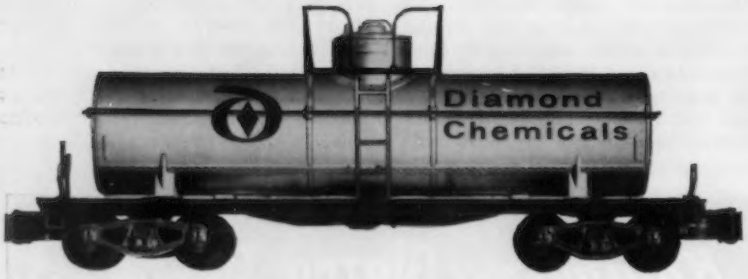

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Aluminum sulphate:			
grd. coml. bulk, c.l. wks.	cwt.	$2.00	/ —
grd. iron-free, c.l. wks.	cwt.	3.55	/ —
Casein, acid prec.:			
dom. sh. pt. c.l., (30 mesh)	cwt.	56.00	/ —
Arg. ex dock	cwt.	18.75	/19.50
New Zealand	cwt.	23.50	/24.50
Caustic soda:			
c.l. wks. solid, 76%	cwt.	4.80	/ —
flak. & grd. drums, c.l.	cwt.	5.20	/ —
liquid 50% tanks		2.90	/ —
liquid 73% tanks		3.00	/ —
China Clay			
dom., dry-grd., airfloat:			
325 mesh bgs., c.l. Geo.	ton	10.00	/12.00
300 mesh, bgs., c.l. Geo.	ton	13.50	/14.50
imp., white, lump, c.l. ex. dock		20.00	/35.00
Chlorine:			
single-unit tanks, works	cwt.	3.15	/ —
multiple unit, 2-5 cars per yr.		5.75	/ 4.05
Lime:			
hydrated, bulk, c.l. works	ton	17.25	/ —
quicklime, bulk, c.l. works	ton	14.25	/ —
Gum rosin:			
K, M, N, drums, c.l. Savan,	cwt.	7.75	/ 7.85
Rosin size:			
70%. gum & pale paste, tank cars, south, sh. pt.	cwt.	7.51	/ —
Saltcake:			
dom. bulk, 100% anh. wks.	ton	28.00	/ —
Soda ash:			
light, 58% ash bags, wks.	cwt.	1.85	/ —
bulk, c.l. wks.	cwt.	1.55	/ —
Sodium chlorate:			
drums, c.l., wks.	cwt.	9.00	/ —
drums, l.c.l., wks.	cwt.	9.50	/10.50
Sodium peroxide:			
dms., c.l. E. of Miss.	lb.	.20½/	—
l.c.l. (same basis)		.21	/ .21½
Sodium silicate, 40° Be.:			
tank-cars, wks.	cwt.	1.20	/ —
drums, c.l. wks.	cwt.	1.55	/ —
47° Be. WW.			
tank-cars, c.l. wks.	cwt.	1.90	/ —
drums, c.l. wks.	cwt.	2.25	/ —
Soybean, protein:			
chem. isol., wks. c.l. bags	lb.	.19	/ .23
Starches:			
Corn, multiwalls, c.l. prod. plant:			
pearl	cwt.	6.49	/ 6.75
white, dextrins	cwt.	8.08	/ 8.20
chlorinated	cwt.	8.25	/ 8.35
potato, Idaho, c.l. wks.	cwt.	6.35	/ —
East, fr. all. 50 cents cwt.			
potato, Maine, c.l. wks.	cwt.	6.50	/ —
Sulphuric acid:			
60° Be. chys. c.l. wks.	cwt.	2.00	/ —
l.c.l. wks.	cwt.	2.30	/ —
tank-cars, wks.	ton	18.60	/ —
Sulphur:			
crude, c.l. mines, contract,	long ton	23.50	/ —
f.o.b. vessels Gulf dock	ton	25.00	/ —
Sulphur dioxide:			
liquid, coml. cyl., wks.	lb.	.10	/ .12
multi-unit cars, wks.	lb.	.0535/	—
Talc, fibrous grd., bags:			
c.l. wks., N.Y.	ton	28.00	/ —
l.c.l. wks., N.Y.	ton	31.00	/36.00
Titanium dioxide:			
anstase, c.l. dlvd. E. bags.	lb.	.25½/	—
l.c.l. dlvd.	lb.	.26½/	—
rutile, c.l. dlvd.	lb.	.27½/	—
l.c.l. dlvd.	lb.	.28½/	—

One in a series of interviews with the men who are "Virginia"

"Combination bleaching of mechanical pulp —following peroxide with a hydrosulfite— can give you brightness gains of 15 to 20 points"

Robert Barton, a technical representative for Virginia Smelting Company, discusses the advantages of 2-stage bleaching from the standpoint of costs and results.

Robert Barton, a "Virginia" technical representative

Q Why does 2-stage bleaching give more brightness gains?

A Because the action of peroxide and hydrosulfite on pulp is not the same. Each gains its effect in a different way, and while there is some overlap in their action, there is a very worth-while cumulative effect. In other words, where you can reasonably expect a brightness gain up to 12 points using either bleach alone, the two bleaches used consecutively jump the results to anywhere from 15 to 20 points.

Q What are the advantages of 2-stage bleaching?

A Lower costs and better results—especially if the mill is now using some agent other than hydrosulfite for its single-stage bleaching. The big financial advantage in switching to a combination bleach goes to the pulp mill now using a single stage of peroxide.

Q How does the 2-stage bleach cut costs?

A The principle is to use as little of the more expensive peroxide as possible. The first stage is a bleach with peroxide. Follow this with a hydrosulfite bleach and you have cut the heart out of bleaching costs, at the same time stepping up the quality of the final product. Higher brightness and lower costs are the main reasons why 2-stage bleaching is becoming increasingly popular.

Q Can this process be applied to any kind of pulp with the same results?

A No, the response varies slightly with the wood from which the pulp is made. Good results have been obtained with spruce, poplar and pine groundwood pulps and with a large number of semimechanical pulps made from many species of caustic or sulfite pretreated hardwoods. Mixtures of chemical and mechanical pulps also respond favorably.

Q How can pulp manufacturers find out whether or not the 2-stage bleach will be advantageous to them?

A Simply by calling on the services of "Virginia." We can bring our lab equipment right into a mill, make tests, and demonstrate the possibilities of 2-stage bleaching under practical operating conditions. We will lend the mill any necessary equipment, find a spot in the system where the hydrosulfite stage can be inserted, and help run a mill trial. If the 2-stage process proves desirable, we will stay on the job and help iron out any technical problems that might arise. Under circumstances like these a pulpmaker can easily see where costs are being cut—and examine the improved final product with his own eyes. This is the kind of technical service on which "Virginia" has built its reputation.

• • •

For more information on 2-stage bleaching with "Virginia" zinc or sodium hydrosulfite, write us giving any technical data that may help us evaluate your problem. We will forward technical literature and run laboratory tests provided you furnish us fresh pulp samples. Or, if you say so, we will have a "Virginia" man call and talk over your requirements with you.

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Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	‡$90.00/ —	‡$90.00/ —	‡$90.00/ —
Bleached Gw'd	$97.50/100.00	$97.50/100.00			
Kraft, Blchd.	157.00/ —	160.00/162.50	‡157.00/162.50*		‡157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		‡137.00/ —		
Kraft, Semi-bleached	140.00/ —	140.00/ —			
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	155.00/ —	155.00/ —	*155.00/ —	*155.00/ —	155.00/ —
Sulphite, Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd.	135.00/ —	135.00/ —	†135.00/ —	*130.00/ —	
Sulphite, Unb'l. Gl'sn		134.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

‡ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances

NEW YORK RAG MARKET

PRICES NOMINAL

New Domestic Cotton Cuttings

Delivered Mill Basis

	Per 100 lbs.
No. 1 White Shirts	$13.50/$14.50
No. 1 Unblchd. Muslins	16.00/ 17.00
Blchd. & Unblchd. Underwears	15.00/ 16.00
No. 1 Light Cream Silesias	12.00/ 13.00
No. 1 Light Blue Overalls	7.00/ 8.00
Percales	6.00/ 6.50
No. 1 Light Prints	5.00/ 5.50
Suntan Khakis	5.75/ 6.75
Cottonades	3.00/ 3.50
No. 1 Washables	2.50/ 3.25

Old Domestic Cotton Rags

Delivered Mill Basis

	Per 100 lbs.
Mixed White	$3.25/$3.75
Cotton Pants & Overalls	2.25/ 2.75
Twos and Blues, Repacked	2.00/ 2.50
No. 2 Roofing	.60/ .75

COTTON LINTERS

Memphis Market
f.o.b. Oilmills

Week Ended Aug. 8	Per 100 lbs.
Grade 1 } n. a. 2 }	
3 }	$8.00/ $7.50
4 }	7.00/ 6.50
5 } 1 cut—felting	6.00/ 5.50
6 }	5.00/ 4.50
7 }	4.25/ 3.75

*Based on 73% cellulose.

OLD ROPE & BAGGING

(Prices to Dealers, f.o.b. N.Y.)

	Per 100 lbs.
New Burlap Cuts	$4.50/$5.50
Scrap Burlap	3.50/ 4.25
Australian Wool Pouches	5.00/ 5.50
Gunny	4.50/ 5.00
No. 1 Domestic Manila Rope	6.25/ 7.50
No. 1 Foreign Manila Rope	5.25/ 6.25
Domestic Sisal Strings	4.00/ 4.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	Aug. 11	Aug. 11	Aug. 11	Aug. 11
No. 1 Mixed Paper	$5.00/ $7.00	5.00/ 7.00	4.00/ —	13.00/ —
No. 1 News	13.00/ 15.00	14.00/ —	14.00/ —	14.00/ —
Overissue News (Lg. size)	11.00/ 14.00	11.00/ 13.00	19.00/ —	18.00/ —
Mill Wrappers	10.00/ 13.00	10.00/ 12.00	7.00/ —	13.00/ —
Old Corrugated Containers	26.00/ 27.00	25.50/ 26.00	21.00/ —	22.00/ —
Super Resorted Kraft Paper	30.00/ 35.00	35.00/ 40.00	35.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts	35.00/ 37.00	40.00/ —	40.00/ —	30.00/ 35.00
(Semi-chem. medium)	40.00/ 47.50	45.00/ 47.50	40.00/ 47.50	35.00/
New 100% Kraft Corr. Cuts	50.00/ 55.00	50.00/ 55.00	55.00/ —	45.00/ —
New Br. Kraft, Env. Cuts	65.00/ 70.00	70.00/ 75.00	50.00/ —	50.00/ 55.00
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	50.00/ —	55.00/ 60.00
New Br. Kr. Bag Waste Unprintd	60.00/ 65.00	65.00/ 75.00	60.00/ —	55.00/ 60.00
No. 1 Groundwood Shvs.	21.00/ 25.00	20.00/ 25.00	14.00/ —	30.00/ 35.00
White Newsblanks	45.00/ 50.00	45.00/ 50.00	35.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 60.00	60.00/ 65.00	55.00/ —	— / —
Super Soft White Shvs.	65.00/ 75.00	75.00/ 85.00	65.00/ —	— / —
Hd. White Shvs.	85.00/ 95.00	95.00/105.00	85.00/ —	85.00/ 90.00
Hd. White Env. Cuts	105.00/110.00	110.00/115.00	90.00/ —	100.00/110.00
Col. Tab. Cards	50.00/ 55.00	55.00/ 60.00	47.50/ —	27.50/ —
Manila Tab. Cards	70.00/ 75.00	70.00/ 75.00	65.00/ —	65.00/ —
No. 1 Col. Ledger	30.00/ 32.50	30.00/ 35.00	40.00/ —	22.00/ —
White Ledger	50.00/ 55.00	45.00/ 50.00	52.50/ —	45.00/ —
Mixed Book & Mag.†	15.00/ 18.00	17.00/ 19.00	12.00/ —	— / —
No. 1 Books‡	19.00/ 23.00	20.00/ 22.00	27.50/ —	— / —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

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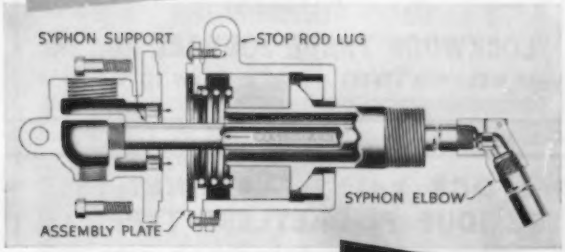

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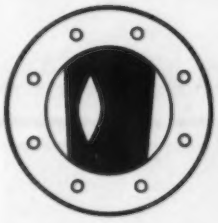

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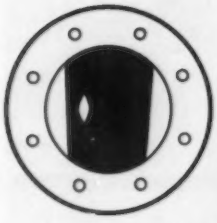

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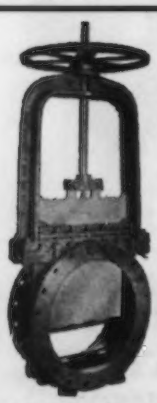

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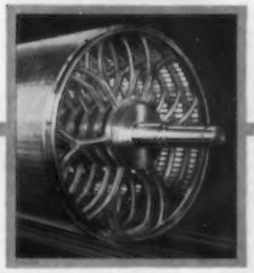

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A-25

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1—31½" 4-Color Heinrich Flexographic Press.
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1—30" Kidder 6 station Flexographic press
1—26" 4 color Kidder Flexographic.
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1—52" Lawson, Auto Spacer.

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1—60" Cameron Type 42, for small rolls.
1—72"—10-04 8 Shear Cut.
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1—60" Langston Type A.
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1—45" Ruf Duplex Winder.
1—42" Kidder Merchant Model
1—38" and 1—40" Beck Razor Blade.
2—24", 1—30", 1—36" & 1—40" Kidder S.L. Shear cut

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1—48" Hot Melt Coated and Laminator
1—48" Latest type Vickers Lt'd. Waxer (English). 2000 F.P.M.
1—54" and 1—72" Mayer Equalizer Waxing machines.
1—40" and 1—52" Parry Liner with Reeves Drive (Roll to roll and roll to sheet)
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1—60" Hot Melt Coaters & laminators
1—46" Waldron Reverse Roll Coater
1—Knowlton Tube Winder with Recutter.
7—Hamblet Sheeters 42", 45", 50", 62", 68", 72" and 84"
1—30" Peters Sheeter. Model UD.
1—45" Model CSHD Beck Sheeter with layboy.
1—45" and 1—55" Globe Sheeter.
3—Schultz continuous roll winders. Two—12", One 18" and 1—48".
2—Model B. 10 Baaprint machines.
Die Presses: 1—60" x 14" Seeley. 1—50" x 33" Sheridan, roll feed. 2—17" x 42" Seybolds.
1—2 Web, 1—3 Web Paper Converting Co.'s. Jr. Dispenser Napkin Machines
1—Potdevin Model 111-CF & S Cellophane Bag Machine.
1—54" x 26" Sheridan, Model 9A. Embossing Press, roll feed.
4—Hayssen Wrapping Machines.
2—Simplex Model "B" Packaging Machines with Electric Eye
1—Roto Model C Cellophane Bag machine
1—Weber Model 2-CN Cello Bag Machine
1—50" Hudson Sharp Embosser-tinter.
1—48" Unicraft Embosser
3—Waldron Embossers; 1—22", 1—46" & 1—60" (latter two heavy duty)
1—30" Dornbush embosser.

A-18

BEATERS
2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54" x 48", cast iron tubs.

CALENDER STACKS
1—3 roll 30" face friction Calender Stack (Holyoke), 2 iron rolls, 1 cotton roll and 1 spare cotton roll.
1—3 roll 84" calender stack.
1—4 roll 72" Calender Stack. (Extra heavy duty).
1—5 roll 82" face.
1—5 roll 86".
1—7 roll, 84" face.

CHIPPERS
1—96" Murray 4 knife Chipper—anti-friction bearings.
1—84" 10 knife Carthage Chipper. Anti-friction bearings.
24—Chipper Knives 15⅞ x 8¼, 2 slot.

COUCH ROLLS
4—Practically new, rubber couch rolls, 18" diameter x 78" face.

CREPING DRYER
1—48" diameter x 120" face, with frames, bearings, doctor blade and drive.

CRUSHER & HAMMERMILL
1—Murray Chip Crusher.
1—Jeffrey Hammermill (18" dia. rotor).

CYLINDER MOLDS
2—48" diameter x 108" face.
8—36" diameter x 94" face, hollow shafts. Very good condition.
1—30" diameter x 72" face.
1—30" diameter x 92" face.
1—36" diameter x 84" face.
2—36" dia. x 54" base
2—36" diameter x 110" face.
3—36" diameter x 90" face, 18" diameter couch rolls.
1—60" dia. x 170" face.

DIGESTERS
1—Biggs 12' 6" (Globe).

DISINTEGRATOR
1—Shartle 8" disintegrator (new) with 125 horsepower induction motor. (Totally enclosed).

DRIVES
1—Rice-Barton hypoid enclosed drive, 4 to 1 ratio.
1—#6 Reeves vertical—anti friction bearings, totally enclosed.
1—Sandy Hill right angle 50 H.P. (4.75 to 1)
1—Jones 21 H.P., ratio 10 to 1 (enclosed angle drive).
1—#4 Reeves Drive.
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 H.P.).
3—Rice Barton enclosed drives, double reduction (14 to 1 one end, 4 to 1 other end).
1—Beloit hypoid enclosed drive 60 h.p. 5 to 1 ratio.

DRYERS
1—28" diameter x 84" face.
2—30" diameter x 40" face, with bearings.
2—30" diameter x 48" face, with bearings.
60—36" diameter x 84" face, complete with frames, gears & bearings.
4—48" dia. x 52" face with frames, gears, bearings.
1—36" diameter x 44" face.
3—36" diameter x 76" face.
6—36" diameter x 80" face.
22—28" diameter x 40" face with frames, gears and felt rolls.
1—16" diameter x 54" face (steel.)
6—48" diameter x 130" face.
2—Cooling Drums, bronze, 36" x 128", with frames, gears and necessary rolls to make up the unit. (After dryers)

EMBOSSING CALENDERS
1—43" 3-Roll Embossing Calender.
1—62" 2 roll Embosser.

EXTRACTOR ROLL
1—Extractor roll, 26" diameter x 104" face.
1—Rice Barton & Fales, Extractor Roll, 26" diameter x 104" face.

FELT CONDITIONERS
1—Scofield, 125" face.
1—Scofield, 154" face.

FELT ROLLS
50—Brass Felt Rolls, with Brass Journals, 72" face x 5" dia.

FLAT SCREENS
1—8 Plate "Packer".
1—12 Plate "Packer".
1—16 plate "Packer" late type roller shoes.

JORDANS
1—Noble & Wood Mammoth.
1—Noble & Wood Monarch, Type D.

LABORATORY EQUIPMENT
1—Bauer-McNett Fibre Classifiner, monel tanks, complete with copper screened plates.
2—12" x 12" Reener Vibrating Screens, stainless steel.
1—basis weight scale
1—16" diameter x 24" face Laboratory High Pressure Dryer
1—Press Roll, 6" diameter, 24" Face, steam jacketted
1—8" x 8" Sheet Mold, new.
1—¼" Extruding Head.
1—2' Shartle Hydrapulper.
2—8" x 8" Valley Sheet dryers.
1—12" x 12" Valley Sheet dryer.
1—6" diameter Hydraulic Press.
1—25 lb. Valley Laboratory Beater, with washer.
1—Vissolver.
1—Glaromeler.
1—15 lb. Dilts Hollow Mid Feather Laboratory Beater, antifriction bearings. Complete with washer.
1—Alsop Filter Press.
1—Experimental Digester (High Pressure).
1—Elmundorf Tear Tester.

LAMINATING MACHINES
2—84" Asphalt laminators.

MISCELLANEOUS
1—#1 Miami Selectrap.

PACKAGING MACHINE
1—Morpac Packaging Machine (Details on request).

PRESS ROLLS
2—Chilled iron, chrome plated 9" x 72".
1—Chilled iron, chrome plated 12" x 100".
1—Chilled iron, chrome plated 10" x 74".
8—sets (1 rubber, 1 chrome steel) 74" face x 15" dia., complete with bearings.

PULPERS
4—Dyno-Pulpers.

PUMPS
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REELS
1—86" 2 bowl reel.
1—84" 3 bowl revolving reel.
1—100" Rice Barton 2 bowl Reel, heavy duty.
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1—72" Downingtown Reel, 2 bowl.

REFINERS
1—#2 Claflin refiner.
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REGULATOR
1—Bird Consistency Regulator.
1—Trimbey Consistency Regulator.

ROLLS
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ROTARY SCREENS
6—Trimbey Sr. Pulp Screens.
1—#1A Bird, copper vat.
2—APMEW Rotary Pulp Screens.

SAVEALLS
1—LaMorte, 48" diameter x 82" face cylinder mold.

SCREEN PLATES
Bird Rotary screen plates.

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1—132" Hamblet heavy duty duplex sheeter, anti-friction bearings throughout, including laybow and backstand.
1—84" Hamblet, duplex, back stands.

SHREDDERS
1—16" "Swift" Paper Shredder.

SLITTERS & WINDERS
1—32" Cameron Type 9.
1—42" Cameron Type 9.
3—42" Cameron Type 6.
1—42" Cameron Type 8.
1—42" Cameron Type 26-2A.
1—42" Cameron Type 26-3A (Duplex).
3—50" Cameron Type 6.
1—62" Cameron Type 6.
1—62" Cameron Type 8.
1—72" Cameron Type 9.
1—84" Cameron Type 12
1—150" Cameron Type 18.
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1—128" Beloit Shear cut winder, drive and variable speed motor.
1—150" Cameron Type 18.

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84"—Quick change slitting device shear cut, complete, practically new.

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18—3" Johnson steam joints (new).

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2—150" Stainless steel Suction Boxes.

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1—Millspaugh, 30" diameter x 154" face, trunnion anti friction bearings.

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S-8

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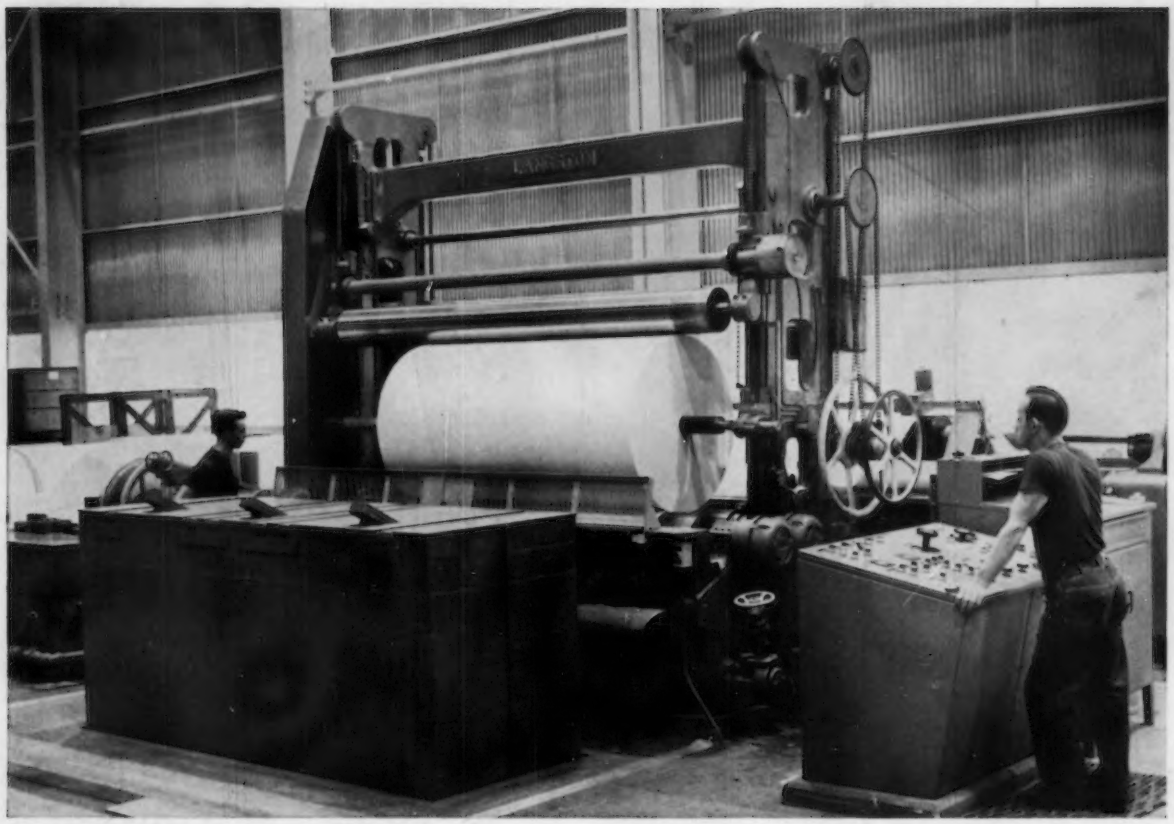

One of the two 104-in. Langston Slitters and Winders in the Glatfelter mill completing rewind. Roll drop table in foreground is up, ready to receive roll when ejected by the winder, and chocks are in raised position to stop the roll. Note console incorporating all major indicators and controls.

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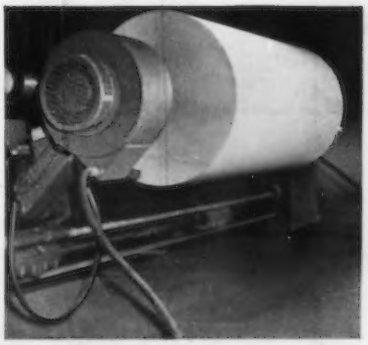

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